RECREATION EXPERIENCE PREFERENCES of WILDERNESS AND BACKCOUNTRY HIKERS

LINVILLE GORGE WILDERNESS
SHINING ROCK WILDERNESS
JOYCE KILMER-SLICKROCK WILDERNESS

by

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INTRODUCTION

The primary goal of outdoor recreation management is to provide opportunities for quality recreation experiences, while protecting the resource base from unacceptable damage. To understand what is a quality recreational opportunity, the managers must have an understanding of the user values which define the types of services that are desired and expected. The Problem Analysis (Review Draft - 1977) of the U. S. Forest Service Rocky Mountain Station (RM-1901) recreation research project summarizes the usefulness of user preference information to management as follows:

> "...it would show the different recreation-related demands of specified user groups; reflect differential values attached to specific recreation activities and environments; make specific management actions more explicit; indicate resources (and management actions) for which expectations are the highest; suggest points of conflict between users having different preferences; and reflect gaps between user expectations and the actual satisfactions realized . . . (and) be useful in the recreation resource inventory process to assess the suitability and capability of given resources to provide specific experience opportunities toward which management objectives could be geared."

Problem Statement

Much research has been directed at defining outdoor recreation preferences. Many such studies have focused on the demands for specific recreation activities and have emphasized actual participation data and trend analysis. While these studies provide useful information for planning and decision making, they are lacking in that they do not define precisely what experiences (psychological outcomes) are desired and expected, and they do not measure the degree to which the user is satisfied with opportunities provided.

The program of research being conducted at RM-1901 addresses the problem of inadequate and incomplete measures of recreation preferences. Based on the results of over 25 empirical studies which provided 16,000 usable questionnaires, approximately 40 Recreation Experience Preference (REP) scales have been developed and tested (Driver, 1977). In these studies respondents have been asked to rate the relative importance of various psychological outcomes as reasons for deciding to participate in a designated activity. Continuing efforts are being made to validly and reliably identify the most pervasive and managerially relevant outcomes that are expected and desired from specific activities by clearly defined types of recreationists and to measure the comparative importance of each of the desired experiences that make up the package of desired psychological outcomes (Problem Analysis for RM-1901, 1977). The study reported here, located as it is in a different region of the country and in a somewhat different cultural setting, is an integral component of the overall effort to increase scale validity, reliability, and managerial usefulness.

Study Objectives

The goal of the study is to refine and improve the REP scales that have been developed by RM-1901. More specific objectives are as follows:

1. To analyze the desired and expected psychological outcomes of overnight and extended day hikers in wilderness and backcountry areas in Virginia and North Carolina.
2. To determine commonalities of response to items in the REP scales used.

3. To cross-check the findings of the REP scales regarding relative importance of psychological outcomes with another psychological scaling technique. (This will be done to assess convergent validity.)
4. To compare and contrast findings with earlier research findings of RM-1901.
5. To type hikers on the basis of their responses to the REP scales used.
6. To determine the travel patterns of hikers with different packages of preferred psychological outcomes.
7. To determine the preferred environmental features of the backcountry or wilderness area by hikers with different packages of preferred psychological outcomes.
8. To suggest improvements in existing psychological outcome preference scales (REP) on the basis of study findings.

METHODOLOGY

An Overview

The following chapter describes the four wilderness or backcountry study areas, the study population, sampling procedures, data collection instruments, the procedures followed to gather relevant data, and study response rate.

Study Areas

Linville Gorge Wilderness

Linville Gorge is a 7600-acre wilderness located in the Pisgah National Forest in western North Carolina (see Figure 1). The area includes a deep, rocky 12-mile river gorge and is known for its rugged but rewarding hiking opportunities (see Figure 2 for a map of the area). The area's 19 miles of trail leave eight trailheads and converge upon and run along the Linville River in the Gorge. The eastern rim of the wilderness contains an assortment of rock formations, making it a favorite among rock climbing enthusiasts.

Though controlled by permit limitations on daily use, visitation figures in Linville Gorge have been increasing at an average of three percent annually since 1974. Use in 1975 was estimated at 38,500 visitor days, or 5.03 visitor days/acre. Day hiking, backpacking, and rock climbing are the major activities in Linville Gorge, but the area also attracts both hunters and trout fishermen. Because of the steepness of the trails, there is virtually no horse use of the area. The heaviest concentration of use seems to occur on the eastern boundary of the gorge, where an estimated 40 percent of the visitors enter. The remaining 60 percent generally enter the area from one of the five trailheads on the northwest boundary.

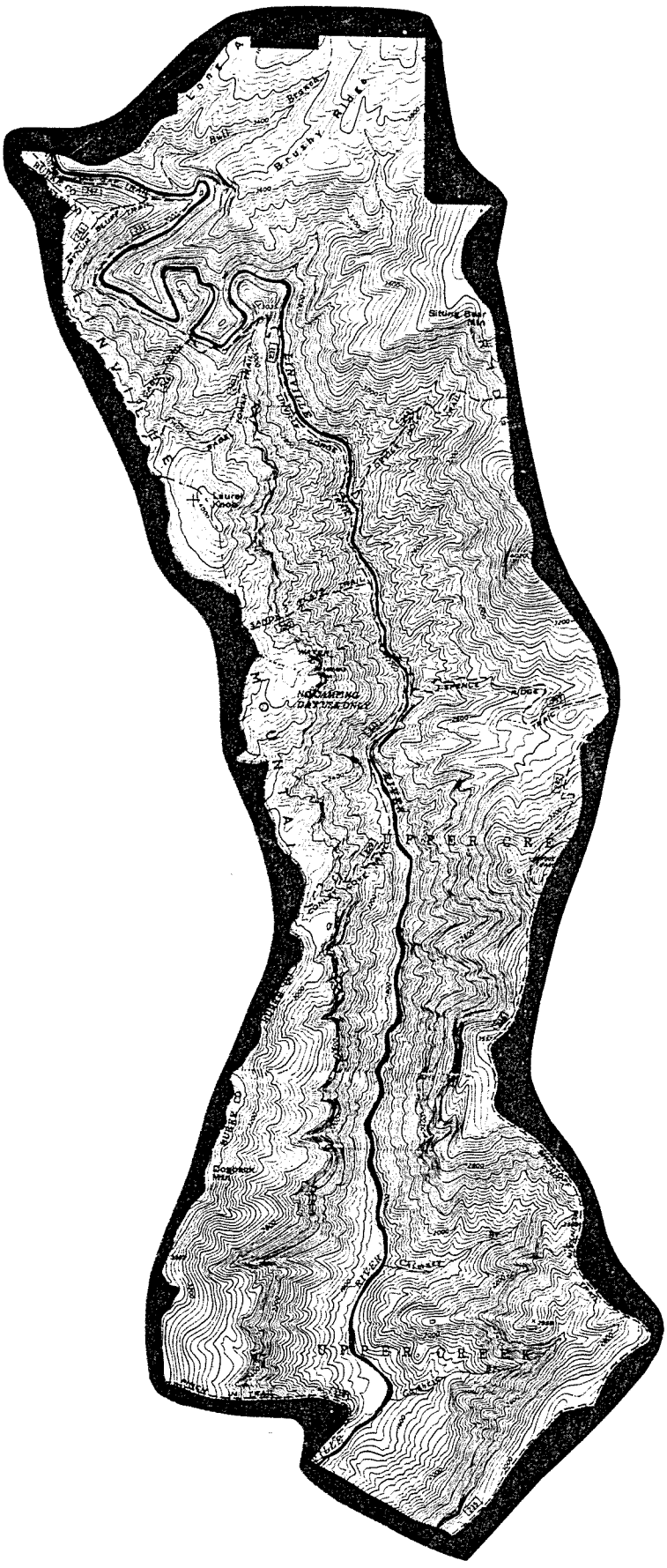
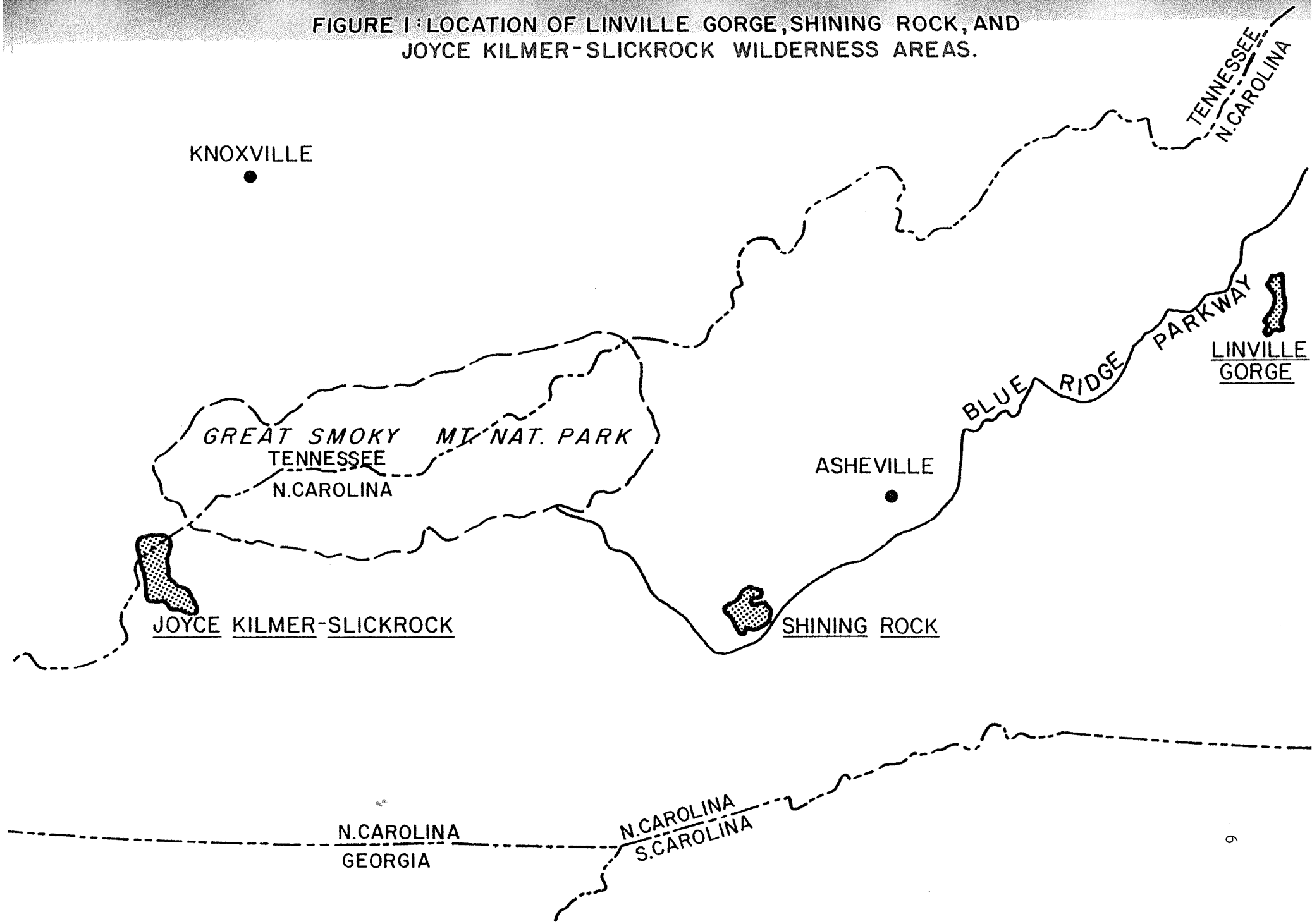


Figure 2. Map of Linville Gorge Wilderness Area.

FIGURE 1: LOCATION OF LINVILLE GORGE, SHINING ROCK, AND JOYCE KILMER-SLICKROCK WILDERNESS AREAS.



After the establishment of Linville Gorge as a wilderness area in 1964, managers became increasingly concerned with overuse of the area and the resultant destruction of its wilderness character. A permit system was adopted in June of 1974 to protect the area from further damage. A capacity limit has been set at 130 visits per day; 100 of these may be day users and 30 overnight users. To disperse use, 50 day-use permits are allocated to each of the east and west sides of the area. Users are restricted to a maximum stay of three consecutive days and two nights per visit. Group size is limited to ten in camping/hiking groups and five in rock climbing groups. Permits are available on a first-come, first-served basis from the USFS office in Marion, North Carolina, and from a private cooperator located near the area. They may be obtained up to one month in advance of the trip in person at both locations and by phone or mail from the USFS office.

Shining Rock Wilderness

Shining Rock Wilderness, established by the Wilderness Act of 1964, is a 13,600-acre wilderness located in the Pisgah National Forest southwest of Asheville, North Carolina (see Figure 2 on page 5). Named for the glistening white quartz outcroppings atop Shining Rock Mountain, the wilderness contains high mountain ridges and deep valleys (see Figure 3 for a map of the area). Elevations in the area vary from 3500 feet to the 6030-foot Cold Mountain. Shining Rock offers a 30-mile system of nine easy to moderately difficult trails. Entry points on the area's southern, eastern, and western boundaries provide access to the trail system.

Figure 3. Map of Shining Rock Wilderness Area.

Use of the area has increased steadily since 1964. In 1975, use reached an estimated 29,400 visitor days, or 2.19 visitor days/acre. Hiking is by far the most common activity in Shining Rock Wilderness; managers estimate that at least 80 percent of use within the area is by hiking groups. The remaining use is by horseback groups, hunters, and berry pickers. The vast majority of visitors enter at two of the available access points: Ivestor Gap and Big East Fork. The estimated 75 percent of the area users who enter at these trailheads converge at Shining Rock Gap, causing congestion and problems of resource impact.

Wilderness permits are required for entry into Shining Rock, but they carry few use limitations. Length of stay may not exceed two weeks, but there are no restrictions on number of permits available and no allocation of permits to entry points. The permits are available at seven locations near the area and at the USFS office in Pisgah Forest, North Carolina. They may be obtained in person at all locations and in advance by phone or mail from the USFS office.

Joyce Kilmer-Slickrock Wilderness

Joyce Kilmer-Slickrock Wilderness, established by the Eastern Wilderness Act of 1975, covers 14,033 acres in portions of southwest North Carolina and eastern Tennessee. Of the total acreage, 3,740 acres are located just south of Great Smoky Mountains National Park in Graham County, North Carolina. The remaining 10,293 acres lie within the Slickrock Drainage in Monroe County, Tennessee, and Graham County, North Carolina (see Figure 2 on page 5).

The Joyce Kilmer-Slickrock Wilderness offers hiking, hunting, fishing and horseback riding opportunities along 14 trails accessible from

eight entry points. (See Figure 4 for a map of the area.) Trail length varies from .4 to 9.2 miles, with a total trail network of 47.4 miles. The area is generally mountainous with few gently sloping portions. Average slope is 60 percent.

Recreational use of Joyce Kilmer-Slickrock Wilderness has been increasing at an average annual rate of about 17 percent since 1975. Total 1977 use has been estimated at 37,600 visitor days (2.68 visits/acre), a 10,200-visit increase over 1975 estimates. The heaviest concentration of use in Joyce Kilmer-Slickrock Wilderness occurs at the Joyce Kilmer Picnic Area, where an estimated 75 percent enter the wilderness. Heavy day use also occurs in this area, leading to congestion in the adjacent parking lot. Although hiking and backpacking are the predominant activities in Joyce Kilmer-Slickrock, hunting parties of up to 60 persons may be encountered in the fall. Less than one percent of the visitors are estimated to enter on horseback.

At the time of this writing, there are no current use limitations in the management of Joyce Kilmer-Slickrock. No entry permit is required and there is no restriction on length of stay or group size.

Shenandoah National Park

Shenandoah National Park encompasses 195,000 acres of the most scenic natural areas in the eastern U.S. (Fig. 5). Straddling the Blue Ridge for 75 miles from Front Royal to Rockfish Gap, Virginia, the park is most famous for the 105-mile Skyline Drive, which snakes its way along the ridge top from vista to scenic vista. Shenandoah enjoys the distinction of being the nation's first "recycled park." Dedicated in 1936, the park was a collection of used-up private farms with depleted soil and forest

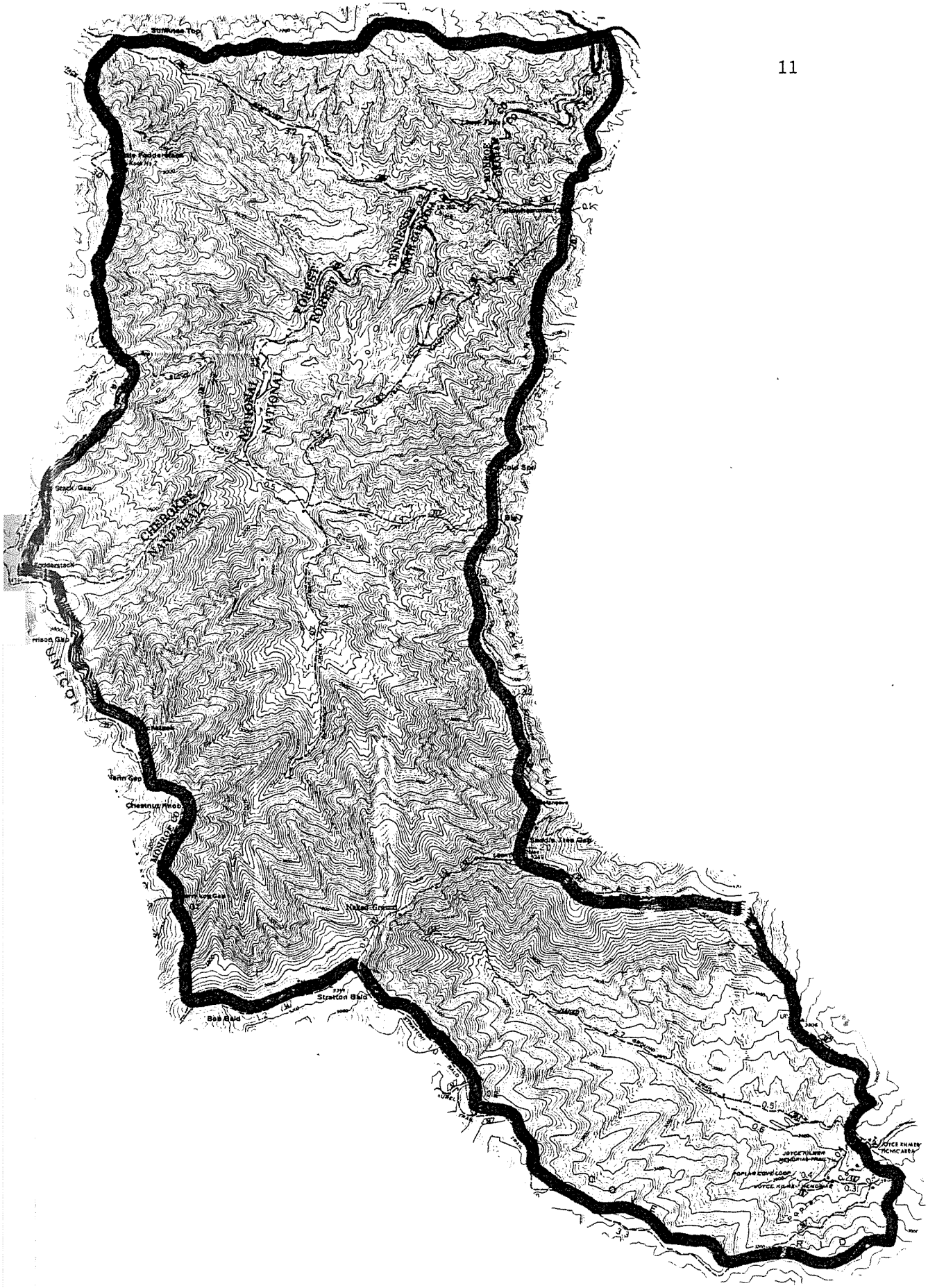
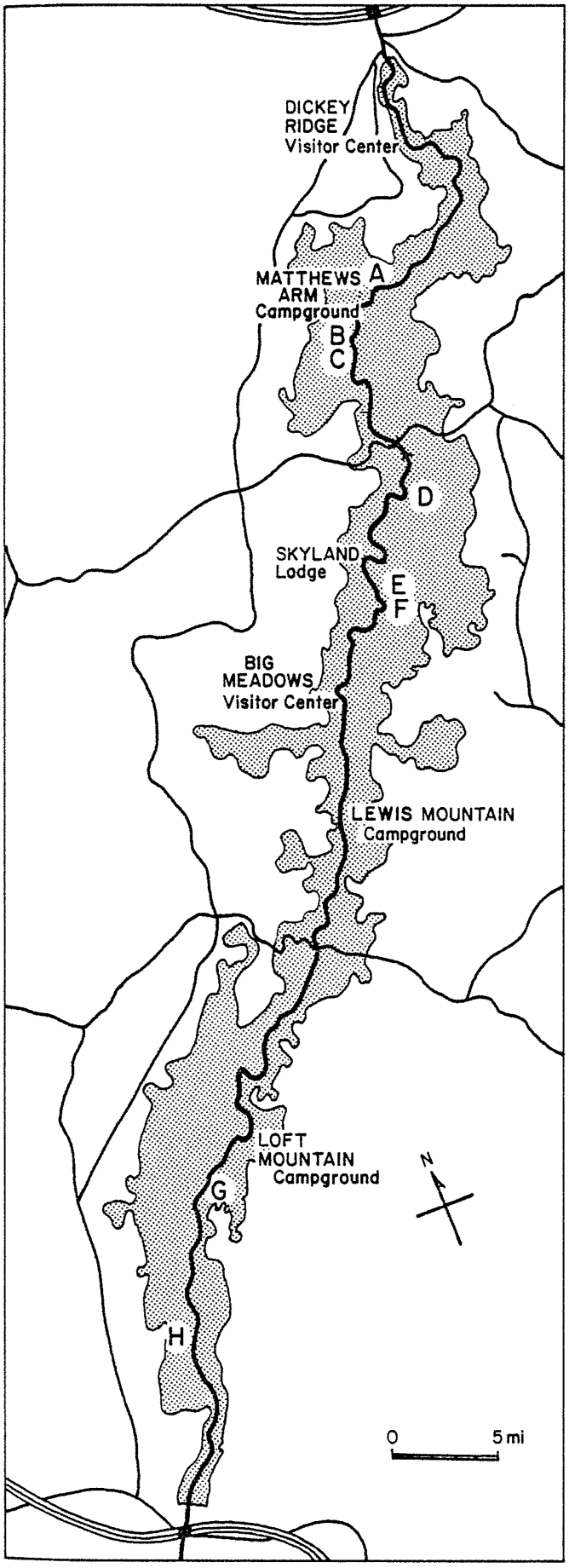


Figure 4. Map of Joyce Kilmer-Slickrock Wilderness Area.



SHENANDOAH NATIONAL PARK

Legend

SAMPLING TRAILHEADS

A	PINEY BRANCH
B	OVERALL RUN FALLS
C	ELKWALLOW – JEREMY'S RUN
D	NICHOLSON HOLLOW
E	WHITE OAK CANYON
F	CEDAR RUN
G	FALLS TRAIL
H	WILDCAT RIDGE

resources. The Commonwealth of Virginia provided matching funds to private donations, bought the land and donated it to the Federal Government for use as a National Park.

The Shenandoah backcountry, those areas more than one-half mile from roads and other developments, includes 188,000 acres of natural beauty and solitude for dispersed recreation. Swift mountain streams, fascinating waterfalls, mysterious rock formations, and an abundance of wildlife, wildflowers, and other plants make Shenandoah a hiker and backpacker's dream. Approximately 419 miles of trails, including 90 miles of the famous Appalachian Trail, thread through the remote sections of the park. Burgeoning use of the backcountry has become a concern of both visitors and managers.

In the late 1950's the use of the backcountry was minimal. By the late 1970's, use had topped 90,000 backcountry visitor nights each year. Backcountry permits are now required, but are not limited in number. They may be obtained at park headquarters, all entrance stations, all visitor centers, and by mail. The regulation of backcountry use is fairly extensive. No person or group may backcountry camp on or in view of a trail, trail shelter, road, park facility, park boundary, or another camping party. Camping within 25 feet of any stream is also prohibited. No person may camp more than two consecutive nights in a single location; fires are not allowed except in fireplaces provided at trailside shelters. Dogs are prohibited on certain trails and must be on a leash at all times. Backcountry rangers patrol the trail system.

Study Population

The study's target population was all day and overnight hikers to the three wilderness areas and to the Shenandoah backcountry. Due to time, budget, and personnel constraints, however, the actual survey population differed somewhat from the target population. Data collection was limited to the 1978 season, and still further to the summer and fall months. Because most use within the four areas occurs during this time, it was felt that the views of the users during the remaining months would not significantly change the study results. In addition, all hikers who were under 16 years of age were excluded from the study.

Sampling Procedures

The sampling goal was to select a group of hikers whose response to the study's research questions and scales would accurately represent the user population. To accomplish this, it was necessary to select an appropriate sample size and an efficient sampling design.

Sample Size

Two criteria were used in determining the study's sample size: cost and precision. It was decided that with an efficient sampling design, project funding would permit between 1200 and 1400 hikers to be contacted. Planned hiker contacts were allocated to study areas as follows: Linville Gorge = 300; Shining Rock = 300; Joyce Kilmer-Slickrock = 300; and Shenandoah = 500. Assuming a 75% response rate to the study's questionnaire, this would give a final sample size of about 1050. Given guesses of the size of, and degree of variation among, the study population, this sample size was judged to provide adequate study precision.

Sampling Design

Linville Gorge and Shining Rock. Somewhat different sampling designs were developed for Linville Gorge and Shining Rock Wilderness Areas than for Joyce Kilmer-Slickrock or Shenandoah National Park. Linville Gorge and Shining Rock have mandatory permit systems, and the decision was made to sample wilderness users from their permits. Courtesy cards which called attention to the possibility of being sampled for the study were given to users when they obtained their permits. This design has the potential problem of not including in the study those individuals who failed to obtain a permit. This problem, however, was not judged to be serious because of the high permit compliance rate. Managers of Linville Gorge estimated that compliance rate during the summer months is as high as 90 percent; Shining Rock managers' estimates of compliance ranged from 75 to 90 percent. As a spot check on these estimates, research technicians contacted wilderness users at two heavily used trailheads on a randomly selected weekend in August, 1978. This field check indicated a high degree of compliance. Twelve of the 17 Linville Gorge hiking groups contacted, or 70 percent, had permits; 94 percent (16 out of 17) of the Shining Rock user groups had obtained permits.

A systematic random sample, stratified by month, was used to select study participants. At the end of each month a research technician travelled to the permit issuing stations, obtained copies of permits issued during the previous month, randomly selected one sample individual from the first five permits, and systematically selected every fifth permit after the random start. The 20 percent sampling fraction was

chosen to assure a final sample size of about 300 for each area.

Joyce Kilmer-Slickrock. Since use permits are not mandatory in Joyce Kilmer-Slickrock Wilderness Area, study participants were contacted at three heavily used trailheads (Joyce Kilmer Memorial Forest Picnic Area, Big Fat Gap, and Yellowhammer Gap; see Figure 4 on page 11). Day hikers who just walked the 1.1-mile Joyce Kilmer Memorial Loop Trail were excluded from the study. Managers estimated that these three trailheads received about 90 percent of the area's use. Sampling was stratified by month and weekend/weekday (Friday-Sunday/Monday-Thursday). One weekend and one weekday cluster were randomly selected each month (Table 1). Thus, seven days were sampled each month; this approximates the 20 percent sampling rate of the other two wilderness areas.

Table 1. Sampling dates for Joyce Kilmer-Slickrock Wilderness, 1978.

Date	Days of Week
June 24-26	Fri, Sat, Sun
July 2-5	Mon, Tues, Wed, Thurs
July 27-29	Fri, Sat, Sun
August 6-9	Mon, Tues, Wed, Thurs
August 17-19	Fri, Sat, Sun
August 31-Sept. 2	Fri, Sat, Sun
September 24-27	Mon, Tues, Wed, Thurs
October 19-21	Fri, Sat, Sun
Oct. 29-Nov. 1	Mon, Tues, Wed, Thurs

Research technicians contacted hikers leaving and entering the wilderness area on the sample days, briefly explained the study to them, and asked for their participation. Information including the names and addresses of the party leaders and two group members was obtained and recorded on a contact sheet (see Appendix A) for each of the groups

agreeing to cooperate in the study. Only 12 people out of the 460 contacted refused to participate. A subset of the contacted hikers was then selected in a systematic random fashion, and these individuals were mailed the study questionnaire.[1]

Shenandoah. Shenandoah National Park backcountry hikers were contacted at eight trailheads or trail intersections on or near the Skyline Drive, which travels the length of the park: Piney Branch (Mile 22.1); Overall Run Falls (Mile 22.2); Elkwallow-Jeremy's Run (Mile 24.1); Nicholson Hollow (Mile 38.4); White Oak Canyon (Mile 42.6); Cedar Run (Mile 45.6); Falls Trail (Mile 81.1) ; and Wildcat Ridge (Mile 92.1). These trails were selected because they vary in the following characteristics: location, length, distance from roads, scenic attractions, degree of difficulty, and amount of use. As such, the trails represent a cross-section of the kinds of hiking experiences which are available in the park. Sampling was stratified by month and weekend/weekday (Saturday-Sunday/ Monday-Friday). One weekend and one two-day weekday cluster were randomly selected each month (Table 2). Thus, four days were sampled each month.

Table 2. Sampling dates for Shenandoah National Park, 1978.

Date	Days of Week
July 21,24	Friday, Monday
July 22-23	Saturday, Sunday
August 12-13	Saturday, Sunday
August 23-24	Wednesday, Thursday
Sept. 9-10	Saturday, Sunday
Sept. 14-15	Thursday, Friday
Oct. 14-15	Saturday, Sunday

[1]The remaining sampled hikers were mailed a different questionnaire as part of another U.S. Forest Service-sponsored research project.

On any given sampling day, research technicians contacted hikers on two trails. This permitted sampling each of the eight study trails on one day a month.

When a contact with a hiker was made, the research assistant explained the study and asked for cooperation. The names and addresses of the party leader and two members of each of the groups agreeing to cooperate in the study were obtained and recorded on a contact sheet (see Appendix B). Virtually every hiker contacted agreed to cooperate in the study. The study questionnaire was mailed to the hikers during October, November, and December, 1978.

Data Collection Instrument

A six-page photo-reduced questionnaire which took about 30 minutes to complete was the study's primary data collection instrument. Its purpose was to obtain the following information from the wilderness and backcountry hikers: (1) socio-demographic characteristics; (2) past wilderness and backcountry experience; (3) trip planning information; (4) trip characteristics; (5) recreation experience preferences; (6) preferences for environmental features; and (7) satisfaction with the hiking experience.

The Rocky Mountain Forest and Range Experiment Station provided the study's 55-item Likert-type recreation experience preference scale; the study's principal investigator developed the remaining portion of the survey instrument. Copies of the first draft of the questionnaire were reviewed by scientists at the Rocky Mountain Experiment Station, Colorado State University, Virginia Polytechnic Institute and State University, and Shenandoah National Park. It was also pretested among 75 users of the Shenandoah backcountry.

The final form of the questionnaire differed only slightly for the four areas (see Appendix C). The information obtained on socio-demographic characteristics included age, sex, education, occupation, income, marital status, and size of community in which the respondent grew up and now lives. Items measuring past wilderness experience were frequency of visits to the study area and other wilderness areas, normal length of stay, and favorite roadless areas.

Questions on trip planning were included in the survey form to determine who made the decision to go on the hike, source of information about the hiking area, length of time before hike of final trail selection, and preferred season of year and time of week for the hike. Trip characteristic measures included group size, group composition, and length of stay.

Table 3 lists the 55 Likert-type items included in the questionnaire to measure recreation experience preferences,[2] the scales to which previous work by Driver and his associates (1979) has shown the items to belong, and the more general domains which include one or more scales. Two other scaling techniques, the paired comparison and rank order routines, were used among a randomly selected subset of the Shenandoah National Park backcountry hikers to accomplish Study Objective #3 (i.e., to cross-check the validity of the standard recreation experience preference scales). Since it would have been very difficult and extremely tedious for respondents to rank order or compare all possible pairs of the study's 55 items, only ten items representing the experience preference domains found most important for hikers (Driver, 1978) were included

[2] The questionnaire includes 57 items, but the first two are dummy items provided solely to permit respondents to become familiar with the scale.

Table 3. Recreation experience preference items, scales, and domains included in study questionnaire.

Item	Scale	Domain
Gaining a sense of self-confidence	Reinforcing Self-Image	Achievement
Showing others you can do it	Social Recognition	Achievement
Becoming better at it	Skill Development	Achievement
Developing your skills and abilities	Skill Development	Achievement
Testing your abilities	Competence Testing	Achievement
Learning what you are capable of	Competence Testing	Achievement
Experiencing excitement	Seeking Stimulation	Achievement
Feeling your independence	Independence	Leadership/Autonomy
Being on your own	Independence	Leadership/Autonomy
Being your own boss	Autonomy	Leadership/Autonomy
Being free to make your own choices	Autonomy	Leadership/Autonomy
Teaching your outdoor skills to others	Teaching-Sharing Skills	Leadership/Autonomy
Sharing what you have learned with others	Teaching-Sharing Skills	Leadership/Autonomy
Helping direct the activities of others	Leading Others	Leadership/Autonomy
Taking risks	Risk Taking	Risk Taking
Chancing dangerous situations	Risk Taking	Risk Taking
Being near others who could help you if you need them	Risk Moderation	Risk Taking
Knowing others are nearby	Risk Moderation	Risk Taking
Avoiding the unexpected	Risk Avoidance	Risk Taking
Testing and using your equipment	Equipment	Equipment
Doing something with your family	Family Togetherness	Family Togetherness
Bringing your family closer together	Family Togetherness	Family Togetherness
Being with other members of your group	Being with Friends	Being with People
Being with friends	Being with Friends	Being with People
Being with people having similar values	Being with Similar People	Being with People
Talking to new and varied people	Meeting New People	Meeting-Observing New People
Observing other people in the area	Observing Other People	Meeting-Observing New People

Table 3. Recreation experience preference items, scales, and domains included in study questionnaire (continued).

Item	Scale	Domain
Learning more about things there	General Learning	General Learning
Experiencing new and different things	Exploration	General Learning
Getting to know the lay of the land	Geography of Area	General Learning
Studying nature	Learn about Nature	General Learning
Learning more about nature	Learn about Nature	General Learning
Viewing the scenery	Scenery	Relationships with Nature
Viewing the scenic beauty	Scenery	Relationships with Nature
Being close to nature	General Nature Experience	Relationships with Nature
Enjoying the sounds and smells of nature	General Nature Experience	Relationships with Nature
Developing personal spiritual values	Spiritual	Reflect on Personal Values
Thinking about your personal values	Introspection	Reflect on Personal Values
Thinking about who you are	Introspection	Reflect on Personal Values
Being creative	Creativity	Creativity
Doing something creative, such as sketching, painting, photography, etc.	Creativity	Creativity
Thinking about good times you've had in the past	Nostalgia	Nostalgia
Getting exercise	Exercise/Physical Fitness	Exercise/Physical Fitness
Keeping physically fit	Exercise/Physical Fitness	Exercise/Physical Fitness
Resting physically	Physical Rest	Physical Rest
Releasing or reducing some built-up tensions	Tension Release	Escape Personal-Social Pressures
Giving your mind a rest	Slow Down Mentally	Escape Personal-Social Pressures
Getting away from the usual demands of life	Escape Role Overloads	Escape Personal-Social Pressures
Having a change from your daily routine	Escape Daily Routine	Escape Personal-Social Pressures
Experiencing tranquility	Tranquility	Escape Physical Pressure

Table 3. Recreation experience preference items, scales, and domains included in study questionnaire (continued).

Item	Scale	Domain
Feeling isolated	Privacy	Escape Physical Pressure
Experiencing more elbow room	Escape Crowds	Escape Physical Pressure
Being away from noise back home	Escape Physical Stresses	Escape Physical Pressure
Being near considerate people	Social Security	Security
Trying to experience some of what the pioneers did	(new item)	(new item)

in the comparative tests. (See Table 4 and Appendices D and E.)

A 50-item scale patterned after the work of Brown et al. (1977) was included in the questionnaire to assess hiker preferences for environmental features. This multidimensional scale used a Likert-type format to tap the following environmental attributes believed to be important: meadow-forest, water-related, wildlife, dense vegetation, rugged topography, rare or unique natural features, fish-related, nuisances, and intrusions.

Finally, hiker satisfaction was measured by one general item tapping overall feelings about the experience. On the request of scientists at Shenandoah National Park, 16 items dealing with hiker satisfaction with backcountry management alternatives were added to the Shenandoah version of the questionnaire.[3]

Data Collection Procedures

The study questionnaire was mailed to all sample individuals during the fall and early winter months of 1978. The survey packet contained a cover letter (see Appendix F), the questionnaire, and a self-addressed, stamped, return envelope. One week after the initial mail-out, study participants were sent a postcard reminder (Appendix G). If the questionnaire had not been returned within two weeks of the postcard mailing, another complete survey packet was mailed to the respondent. The packet was identical to the first, except that a somewhat stronger cover letter urging cooperation in the study was included (Appendix H). If the sample individual still had not responded three weeks after the second questionnaire mail-out, a third packet was sent. Again, the materials in the packet were the same except for an even stronger cover letter (Appendix I).

[3]Only those questionnaire items which relate to this study's objectives are considered in this report.

Table 4. Ten recreation experience preference items and scales used in paired-comparison and rank-order scaling routines.

Item	Domain
Enjoying the scenery and the smells and sounds of nature	Relationships with Nature
Getting away from other people and noise and congestion	Escape Physical Pressure
Being on your own and making your own choices	Leadership/Autonomy
Exploring and experiencing new and different things	General Learning
Developing and testing your skills and abilities	Achievement
Getting away for a while to reduce tensions and rest your mind	Escape Personal-Social Pressure
Doing something with your family	Family Togetherness
Getting exercise to keep physically fit	Exercise/Physical Fitness
Being with your friends or people with similar values	Being with People
Learning more and developing your knowledge	General Learning

These follow-up procedures, recommended by Dillman et al. (1974), were carried out to increase the questionnaire response rate.

Response Rates

Table 5 indicates that the following response rates were attained for the four areas: Linville Gorge, 83.5 percent; Shining Rock, 81.5 percent; Joyce Kilmer-Slickrock, 81.3 percent; and Shenandoah: standard recreation experience preference scale version, 86.3 percent; paired-comparison version, 79.8 percent; and rank-order version, 88.1 percent. All of these response rates were believed adequate to permit valid conclusions about the user population. Therefore, no follow-up contacts among the non-respondents were carried out.

Table 5. Questionnaire response rate for four wilderness or backcountry study areas.

Area	Mailed Out N	Number Returned N	Response %
Linville Gorge	315	263	83.5
Shining Rock	372	303	81.5
Joyce Kilmer-Slickrock	96	78	81.3
Shenandoah:			
Standard REP scale[1]	329	284	86.3
Paired-Comparison REP scale	109	87	79.8
Rank Order REP scale	109	96	88.1

[1]REP scale = recreation experience preference scale.

RESULTS

An Overview

The purpose of this chapter is to report research findings regarding each of the study's eight objectives. The first three major sections--each dealing with one research objective--analyze hiker response to the recreation experience preference scales and assess the validity and reliability of the scales. Section Four compares our REP scale findings with previous work by Driver and his associates. The next three sections describe groups of hikers who have similar preferences for recreation experiences and report relationships between experience preferences and travel patterns and preferred environmental features. The final section suggests improvements in the REP scale on the basis of our study findings.

Objective 1

> To analyze the desired and expected psychological outcomes (REP's) of overnight and extended day hikers in wilderness and backcountry areas in Virginia and North Carolina.

Linville Gorge

Virtually all experiences described in the REP scale added to overnight and day users' satisfaction with the hike (Table 6). Only "knowing others are nearby" and "observing other people in the area" detracted from the experiences of hikers as a group. Hikers valued viewing scenery and being close to nature the most; these items also had the lowest variance in response. Learning was also important in adding to satisfaction for the group as a whole, but the high standard deviation indicates that not all users felt this way. Getting exercise, having a change, and getting away for a while were also important experiences for hikers.

Table 6. Recreation experience preferences of Linville Gorge overnight and day hikers.[1]

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Gaining a sense of self-confidence	142	6.63	1.36	18	106	6.08	1.43	29
Showing others you can do it	141	4.57	1.76	52	105	4.54	1.41	51
Becoming better at it	138	6.30	1.27	31	101	5.73	1.45	37
Developing your skills and abilities	141	6.50	1.19	22	104	6.19	1.37	23
Testing your abilities	141	6.37	1.27	30	104	5.93	1.42	33
Learning what you are capable of	140	6.44	1.41	24	105	6.17	1.31	25
Experiencing excitement	141	6.60	1.32	19	104	6.44	1.32	16
Feeling your independence	142	6.65	1.37	17	106	6.21	1.48	22
Being on your own	140	6.39	1.44	28	104	6.15	1.48	26
Being your own boss	142	5.23	1.54	48	105	5.09	1.38	47
Being free to make your own choices	141	6.19	1.38	35	104	6.12	1.44	27
Teaching your outdoor skills to others	140	5.69	1.42	41	104	5.53	1.53	42
Sharing what you have learned with others	141	6.03	1.44	37	104	5.77	1.38	36
Helping direct the activities of others	141	4.89	1.65	51	104	4.66	1.65	50
Taking risks	142	5.25	1.91	47	104	4.88	1.64	49
Chancing dangerous situations	140	4.91	2.16	50	104	4.44	1.79	52
Being near others who could help if you need them	141	5.13	1.52	49	105	4.91	1.15	48
Knowing others are nearby	139	3.58	1.93	54	104	3.63	1.78	54
Avoiding the unexpected	138	4.31	1.77	53	101	4.25	1.68	53
Testing and using your equipment	141	5.61	1.32	43	106	5.36	1.35	45

Table 6. Recreation experience preferences of Linville Gorge overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something with your family	140	5.74	1.76	40	104	5.96	1.61	32
Bringing your family closer together	139	5.35	1.70	46	105	5.46	1.54	43
Being with other members of your group	142	6.43	1.33	25	105	6.21	1.53	21
Being with friends	141	6.69	1.27	14	104	6.28	1.42	19
Being with people with similar values	142	6.15	1.59	36	107	6.00	1.51	30
Talking to new and varied people	142	5.58	1.71	45	106	5.13	1.73	46
Observing other people in the area	142	3.51	2.00	55	106	3.45	1.88	55
Learning more about things there	142	7.09	1.06	5	107	6.87	0.97	6
Experiencing new and different things	139	6.83	1.13	12	105	6.54	1.33	15
Getting to know the lay of the land	141	6.47	1.11	23	105	6.27	1.15	20
Studying nature	138	6.68	1.20	15	102	6.58	1.11	14
Learning more about nature	139	6.68	1.23	16	103	6.64	1.27	13
Viewing the scenery	142	7.62	0.57	1	106	7.48	0.71	1
Viewing the scenic beauty	141	7.51	0.69	2	104	7.29	0.76	3
Being close to nature	141	7.46	0.83	3	104	7.32	0.88	2
Enjoying the sounds and smells of nature	141	7.28	0.96	4	104	7.15	0.97	4
Developing personal spiritual values	141	6.40	1.72	27	106	6.08	1.59	28
Thinking about your personal values	141	6.38	1.48	29	106	6.19	1.47	24
Thinking about who you are	140	6.26	1.45	32	104	5.83	1.42	34
Being creative	141	6.19	1.34	34	106	5.72	1.35	38

Table 6. Recreation experience preferences of Linville Gorge overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something creative, such as sketching, painting, photography	141	5.67	1.55	42	107	5.56	1.51	41
Thinking about good times you've had in the past	142	5.58	1.59	44	106	5.41	1.42	44
Getting exercise	142	7.06	1.06	6	106	6.85	1.13	7
Keeping physically fit	142	6.90	1.31	10	106	6.73	1.17	12
Resting physically	140	5.81	1.74	39	105	5.64	1.56	40
Releasing or reducing some built-up tensions	141	6.53	1.38	21	106	6.33	1.46	18
Giving your mind a rest	141	6.60	1.35	20	103	6.41	1.35	17
Getting away from the usual demands of life	140	6.96	1.25	9	103	6.80	1.17	9
Having a change from your daily routine	140	6.99	1.12	8	104	6.84	1.14	8
Experiencing tranquility	142	7.01	1.23	7	107	6.92	1.05	5
Feeling isolated	141	6.43	1.44	26	104	5.96	1.59	31
Experiencing more elbow room	141	6.81	1.31	13	104	6.76	1.18	11
Being away from noise back home	141	6.90	1.26	11	104	6.77	1.27	10
Being near considerate people	142	6.22	1.54	33	105	5.70	1.56	39
Trying to experience some of what the pioneers did	140	5.97	1.76	38	104	5.77	1.36	35

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

Differences between day and overnight hikers will be analyzed statistically in the following section when scale scores--in contrast to item scores--are reported. A scan of mean item responses indicates that in all cases except three, the overnight users scored items higher than day users. Only "knowing others are nearby" detracted less from the experience of day hikers, and "doing something with your family" and "bringing your family closer together" added more to satisfaction. When the rank-orders of the two groups were compared, overnight users rated gaining a sense of self-confidence, becoming better at it, and being near considerate people much higher with respect to other experiences than did day users. On the other hand, day users ranked making your own choices, doing something with your family, and being with people with similar values higher.

Shining Rock

Shining Rock hikers rated scale items describing experiences very similarly to Linville Gorge users (Table 7). As in Linville Gorge, only "knowing others are nearby" and "observing other people in the area" detracted from the experiences of the hikers as a group. Again, hikers agreed that viewing nature and being close to nature were most important. Getting exercise, having a change, and experiencing tranquility also added strongly to the hiking experience. Learning appears somewhat less important for Shining Rock users than for Linville Gorge users.

While statistical analyses will be performed in the next section, mean responses to scale items indicate that Shining Rock overnight users tended to rate all experiences as contributing more to satisfaction than did day users. This tendency, however, was not quite as pronounced as

Table 7. Recreation experience preferences of Shining Rock overnight and day hikers.[1]

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Gaining a sense of self-confidence	224	6.31	1.45	24	95	5.80	1.37	29
Showing others you can do it	223	4.36	1.69	52	97	4.47	1.49	50
Becoming better at it	218	6.17	1.39	33	89	5.62	1.35	36
Developing your skills and abilities	217	6.42	1.24	21	91	5.68	1.31	34
Testing your abilities	220	6.27	1.29	28	91	5.51	1.34	40
Learning what you are capable of	219	6.30	1.43	25	91	5.67	1.27	35
Experiencing excitement	218	6.24	1.53	30	90	5.89	1.55	24
Feeling your independence	222	6.54	1.44	18	92	6.08	1.42	20
Being on your own	220	6.47	1.59	19	90	5.83	1.66	27
Being your own boss	225	5.29	1.62	46	96	4.98	1.56	45
Being free to make your own choices	218	6.39	1.38	23	92	5.75	1.38	32
Teaching your outdoor skills to others	219	5.55	1.43	44	91	4.80	1.40	48
Sharing what you have learned with others	217	5.91	1.43	37	93	5.54	1.38	39
Helping direct the activities of others	217	4.71	1.62	50	91	4.31	1.41	51
Taking risks	224	4.76	2.00	49	95	4.21	1.82	52
Chancing dangerous situations	219	4.44	2.03	51	90	4.02	1.91	53
Being near others who could help if you need them	225	4.80	1.71	48	95	4.88	1.57	47
Knowing others are nearby	220	3.62	1.95	55	91	3.92	1.60	54
Avoiding the unexpected	216	4.27	1.71	53	90	4.51	1.59	49
Testing and using your equipment	223	5.58	1.41	43	94	5.13	1.42	43

Table 7. Recreation experience preferences of Shining Rock overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something with your family	221	6.05	1.56	36	94	6.38	1.64	15
Bringing your family closer together	222	5.72	1.65	41	93	5.85	1.67	25
Being with other members of your group	224	6.12	1.42	34	96	5.99	1.51	21
Being with friends	220	6.40	1.32	22	90	5.91	1.38	23
Being with people having similar values	226	6.21	1.40	31	96	5.72	1.67	33
Talking to new and varied people	224	5.21	1.66	47	95	5.02	1.51	44
Observing other people in the area	224	3.75	2.09	54	95	3.76	2.09	55
Learning more about things there	223	6.83	1.15	10	94	6.69	1.22	10
Experiencing new and different things	223	6.76	1.15	12	95	6.36	1.34	17
Getting to know the lay of the land	219	6.45	1.28	20	91	6.24	1.22	19
Studying nature	219	6.62	1.20	19	72	6.38	1.33	16
Learning more about nature	219	6.69	1.18	14	91	6.43	1.29	13
Viewing the scenery	224	7.52	0.75	1	95	7.49	0.74	1
Viewing the scenic beauty	220	7.37	0.91	3	92	7.45	0.76	2
Being close to nature	224	7.43	0.84	2	94	7.36	0.88	3
Enjoying the sounds and smells of nature	219	7.20	1.02	4	92	7.11	1.00	4
Developing personal spiritual values	224	6.27	1.59	29	95	5.80	1.64	30
Thinking about your personal values	223	6.30	1.54	26	93	5.84	1.61	26
Thinking about who you are	219	6.07	1.52	35	90	5.54	1.55	38
Being creative	225	5.86	1.49	38	96	5.35	1.51	42

Table 7. Recreation experience preferences of Shining Rock overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something creative, such as sketching, painting, photography	223	5.52	1.63	45	94	4.90	1.49	46
Thinking about good times you've had in the past	225	5.68	1.55	42	98	5.83	1.57	28
Getting exercise	226	6.92	1.23	9	96	6.90	1.17	6
Keeping physically fit	225	6.73	1.21	13	96	6.69	1.24	11
Resting physically	224	5.75	1.71	40	96	5.76	1.66	31
Releasing or reducing some built-up tension	225	6.69	1.34	15	97	6.40	1.40	14
Giving your mind a rest	220	6.62	1.45	16	92	6.35	1.55	18
Getting away from the usual demands of life	220	6.95	1.24	7	92	6.66	1.49	12
Having a change from your daily routine	220	6.96	1.18	6	92	6.91	1.32	5
Experiencing tranquility	224	6.98	1.20	5	96	6.76	1.33	7
Feeling isolated	220	6.30	1.57	27	91	5.92	1.77	22
Experiencing more elbow room	219	6.80	1.34	11	91	6.70	1.30	9
Being away from noise back home	219	6.93	1.31	8	91	6.73	1.50	8
Being near considerate people	224	5.81	1.70	39	95	5.47	1.75	41
Trying to experience some of what the pioneers did	219	6.17	1.50	32	92	5.61	1.50	37

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

in Linville Gorge. For example, day hikers appear to rate showing others you can do it, avoiding the unexpected, doing something with the family, bringing the family closer together, and thinking about good times of the past as more important; knowing others are nearby detracted less from the experience. Some substantial differences between the two hiking groups were evident in the rank ordering of scale items. Day hikers ranked family togetherness and nostalgia as much more important in comparison with other experiences than did overnight users. In contrast, the overnight users ranked competence testing much higher than did day hikers.

Joyce Kilmer-Slickrock

As Table 8 indicates, our sample size for Joyce Kilmer-Slickrock Wilderness was much smaller than for other study areas. This was especially true for day hikers. This reduces our confidence in our conclusions about users of the area. However, if day hikers, or of overnight hikers, are similar in experience preferences across U.S. Forest Service wilderness areas in the Southeast, then the data on Joyce Kilmer-Slickrock users can contribute to our understanding of hiker motives.

The recreation experience preferences of Joyce Kilmer-Slickrock users were similar to Linville Gorge and Shining Rock users. Day and overnight hikers in Joyce Kilmer-Slickrock rated only two items as detracting from their satisfaction: knowing others are nearby and observing other people in the area. This is consistent with findings in Linville Gorge and Shining Rock. In addition, day hikers as a group felt that chancing dangerous situations detracted slightly from their experience. As in the case of the other two areas, Joyce Kilmer-Slickrock hikers also rated viewing scenery and being close to nature as

Table 8. Recreation experience preferences of Joyce Kilmer-Slickrock overnight and day hikers.[1]

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Gaining a sense of self-confidence	62	6.35	1.34	27	18	5.50	1.62	38
Showing others you can do it	62	4.60	1.79	50	18	4.00	1.64	50
Becoming better at it	60	6.17	1.36	34	16	5.88	1.31	26
Developing your skills and abilities	61	6.46	1.16	23	17	5.71	1.65	30
Testing your abilities	62	6.22	1.31	32	17	5.47	1.62	39
Learning what you are capable of	62	6.26	1.28	31	17	5.18	1.59	42
Experiencing excitement	62	6.42	1.25	25	17	5.65	1.46	33
Feeling your independence	62	6.32	1.40	28	18	5.56	1.79	35
Being on your own	62	6.52	1.38	22	17	5.52	1.94	36
Being your own boss	62	5.45	1.48	45	18	4.50	1.58	48
Being free to make your own choices	62	6.45	1.24	24	17	5.24	1.60	41
Teaching your outdoor skills to others	62	5.35	1.06	46	17	5.06	1.82	43
Sharing what you have learned with others	62	5.53	1.16	43	17	5.65	1.69	34
Helping direct the activities of others	62	4.56	1.26	51	17	4.29	1.72	49
Taking risks	62	4.89	2.14	49	18	4.00	1.97	51
Chancing dangerous situations	62	4.18	2.03	53	17	3.53	1.81	54
Being near others who could help if you need them	62	5.06	1.56	48	18	4.83	1.42	44
Knowing others are nearby	61	3.69	1.94	54	17	3.65	2.18	53
Avoiding the unexpected	61	4.30	1.51	52	17	3.94	1.64	52
Testing and using your equipment	62	5.66	1.16	41	18	4.55	1.76	47

Table 8. Recreation experience preferences of Joyce Kilmer-Slickrock overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something with your family	61	6.10	1.61	35	18	6.06	1.47	24
Bringing your family closer together	61	5.90	1.64	39	18	5.67	1.53	31
Being with other members of your group	62	6.31	1.37	29	18	5.78	1.70	28
Being with friends	62	6.65	1.10	18	17	6.59	1.12	15
Being with people with similar values	62	6.10	1.35	36	18	6.11	1.23	22
Talking to new and varied people	62	5.35	1.59	47	18	5.28	1.96	40
Observing other people in the area	62	3.61	2.17	55	18	3.44	2.25	55
Learning more about things there	62	7.08	0.84	8	18	7.44	1.10	4
Experiencing new and different things	62	6.85	1.14	14	18	6.67	1.28	13
Getting to know the lay of the land	62	6.52	1.21	21	17	5.94	1.34	25
Studying nature	52	6.77	1.08	15	17	6.94	0.97	10
Learning more about nature	62	6.95	1.02	13	17	6.82	1.01	11
Viewing the scenery	62	7.74	0.54	1	18	7.83	0.38	1
Viewing the scenic beauty	62	7.60	0.71	2	17	7.76	0.56	2
Being close to nature	62	7.55	0.84	3	18	7.61	0.50	3
Enjoying the sounds and smells of nature	62	7.47	0.84	4	17	7.18	1.19	6
Developing personal spiritual values	62	6.65	1.45	19	18	6.39	1.46	17
Thinking about your personal values	62	6.60	1.45	20	18	6.28	1.49	21
Thinking about who you are	62	6.31	1.50	30	17	5.76	1.30	29
Being creative	62	6.06	1.55	37	18	5.67	1.78	32

Table 8. Recreation experience preferences of Joyce Kilmer-Slickrock overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something creative, such as sketching, painting, photography	62	5.66	1.39	42	18	5.83	1.79	27
Thinking about good times you've had in the past	62	5.52	1.38	44	18	5.50	1.25	37
Getting exercise	62	7.23	1.01	5	18	7.39	0.78	5
Keeping physically fit	62	7.06	1.11	9	18	7.17	0.99	7
Resting physically	61	5.80	1.87	40	18	4.83	2.48	45
Releasing or reducing some built-up tensions	62	6.68	1.29	17	18	6.39	1.54	18
Giving your mind a rest	62	6.68	1.13	16	17	6.47	1.18	16
Getting away from the usual demands of life	62	7.06	1.13	10	17	6.59	1.06	14
Having a change from your daily routine	62	7.05	0.97	11	17	6.29	1.36	20
Experiencing tranquility	62	7.19	1.21	6	18	7.17	1.20	8
Feeling isolated	62	6.40	1.30	26	17	6.29	1.16	19
Experiencing more elbow room	61	7.02	1.19	12	16	7.00	1.32	9
Being away from noise back home	62	7.10	1.14	7	17	6.82	1.42	12
Being near considerate people	62	6.18	1.43	33	18	6.11	1.81	23
Trying to experience some of what the pioneers did	62	5.95	1.43	38	17	4.59	1.77	46

[1]Response format: 0 to 8 scale, where; 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

contributing most to satisfaction with the trip. Getting exercise, experiencing tranquility, and learning more about things there were rated among the next most important sources of satisfaction, and this too follows the pattern of the other two areas.

Day users ranked family togetherness, being with similar people, and creativity higher with respect to other experiences than did overnight hikers. Thus, day hikers in all three Forest Service wilderness areas value social interaction within their group as more important to their experience than do overnight hikers. On the other hand, the overnight hikers in Joyce Kilmer-Slickrock ranked achievement, autonomy, and learning higher than did the day hikers.

Shenandoah

It was anticipated that Shenandoah National Park hikers would differ somewhat from those of the three Forest Service wilderness areas in their preferred experiences. This expectation was based upon the differences in the size, shape, and resources of the park, its administration, its proximity to large metropolitan areas, and its use as a general vacation destination site.

Mean hiker response to REP scale items suggest that Shenandoah hikers follow the pattern of the users of the other study areas (Table 9). Again, viewing scenery and being close to nature were the most valued experiences. Getting away, experiencing tranquility, and getting exercise were also important in adding to satisfaction. General learning ranked somewhat lower than it did for hikers in Linville Gorge and Joyce Kilmer-Slickrock. As in the three Forest Service areas, Shenandoah hikers rated "knowing others are nearby" and "observing other people in

Table 9. Recreation experience preferences of Shenandoah National Park overnight and day hikers.[1]

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Gaining a sense of self-confidence	110	6.64	1.37	16	177	5.84	1.41	37
Showing others you can do it	109	4.66	1.72	51	178	4.74	1.47	50
Becoming better at it	107	6.34	1.43	29	176	5.80	1.38	39
Developing your skills and abilities	109	6.39	1.24	27	177	5.99	1.21	28
Testing your abilities	108	6.38	1.22	26	178	5.91	1.29	35
Learning what you are capable of	109	6.36	1.35	28	177	5.95	1.35	30
Experiencing excitement	106	6.31	1.80	31	174	6.45	1.33	19
Feeling your independence	109	6.82	1.50	14	177	5.92	1.49	32
Being on your own	108	6.57	1.47	20	177	6.05	1.49	27
Being your own boss	108	5.58	1.71	46	177	5.11	1.50	48
Being free to make your own choices	110	6.55	1.47	21	177	5.98	1.42	29
Teaching your outdoor skills to others	107	5.33	1.32	48	177	5.15	1.37	47
Sharing what you have learned with others	108	5.88	1.30	40	177	5.75	1.41	41
Helping direct the activities of others	108	4.62	1.58	52	177	4.66	1.49	51
Taking risks	110	5.55	1.81	47	175	4.86	1.88	49
Chancing dangerous situations	108	4.82	2.02	50	177	4.46	1.92	52
Being near others who could help if you need them	110	5.14	1.70	49	177	5.23	1.46	45
Knowing others are nearby	109	3.69	2.07	55	176	4.16	1.76	55
Avoiding the unexpected	109	4.25	1.87	53	173	4.37	1.78	53
Testing and using your equipment	110	5.75	1.62	44	173	5.18	1.32	46

Table 9. Recreation experience preferences of Shenandoah National Park overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something with your family	108	5.91	1.70	39	175	6.59	1.39	14
Bringing your family closer together	108	5.64	1.63	45	177	6.12	1.58	26
Being with other members of your group	109	6.25	1.45	34	174	6.36	1.27	20
Being with friends	110	6.51	1.43	23	177	6.46	1.29	18
Being with people having similar values	109	6.15	1.28	35	177	6.12	1.34	25
Talking to new and varied people	110	6.09	1.52	37	176	5.95	1.32	31
Observing other people in the area	108	3.92	1.96	54	176	4.28	1.89	54
Learning more about things there	110	6.87	1.21	12	178	6.92	0.99	10
Experiencing new and different things	109	6.83	1.27	13	177	6.86	1.11	12
Getting to know the lay of the land	108	6.30	1.37	32	177	6.20	1.22	23
Studying nature	110	6.65	1.30	15	175	6.58	1.14	15
Learning more about nature	110	6.59	1.29	19	174	6.66	1.13	13
Viewing the scenery	110	7.61	0.77	1	176	7.68	0.58	1
Viewing the scenic beauty	109	7.50	0.77	2	177	7.51	0.68	2
Being close to nature	110	7.49	0.96	3	176	7.31	0.85	3
Enjoying the sounds and smells of nature	109	7.28	1.11	5	176	7.29	0.83	4
Developing personal spiritual values	109	6.53	1.75	22	175	5.92	1.69	33
Thinking about your personal values	109	6.61	1.44	18	176	6.15	1.50	24
Thinking about who you are	108	6.39	1.59	25	176	5.90	1.56	36
Being creative	109	6.26	1.42	33	176	5.76	1.42	40

Table 9. Recreation experience preferences of Shenandoah National Park overnight and day hikers (continued).

Item	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
Doing something creative, such as sketching, painting, photography	110	6.04	1.61	38	177	5.70	1.64	43
Thinking about good times you've had in the past	110	5.77	1.67	42	175	5.83	1.58	38
Getting exercise	110	7.04	1.25	9	178	7.11	0.96	5
Keeping physically fit	110	6.94	1.20	11	178	6.89	1.11	11
Resting physically	109	5.71	1.88	43	174	5.91	1.58	34
Releasing or reducing built-up tensions	110	6.64	1.62	17	176	6.52	1.26	17
Giving your mind a rest	110	6.49	1.42	24	177	6.34	1.48	21
Getting away from the usual demands of life	109	7.40	0.95	4	174	6.95	1.22	8
Having a change from your daily routine	108	7.10	1.16	8	176	7.15	0.93	5
Experiencing tranquility	110	7.19	1.38	7	176	6.94	1.18	9
Feeling isolated	109	6.31	1.79	30	176	5.65	1.73	44
Experiencing more elbow room	108	7.01	1.32	10	177	6.52	1.33	16
Being away from noise back home	107	7.27	1.10	6	177	6.98	1.23	7
Being near considerate people	108	6.10	1.65	36	174	6.29	1.40	22
Trying to experience some of what the pioneers did	107	5.83	1.54	41	177	5.70	1.46	42

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

the area" as least important. Overnight hikers as a group indicated these experiences detracted from their experience, but day users--in contrast to such hikers in other areas--had more neutral mean responses.

The rank ordering of preferred experiences suggests some differences in desired outcomes between day and overnight hikers in Shenandoah. Among the largest differences were the day hikers' greater emphasis upon being with the family and with other members of the group. This is a consistent finding across all study areas. The overnight hikers placed greater value upon gaining self-confidence, feeling independent, and feeling isolated.

Objective 2

To determine commonalities of response to items in the REP scale.

Procedure

A four-step procedure was used to search for commonalities of response to items within the 55-item experience preference scale. First, a hierarchical clustering routine developed by the University of Michigan called OSIRIS HICLSTR was performed on the 55-item scale to identify those groups of items which tapped a single, unique experience preference dimension. Secondly, Pearson product-moment correlation coefficients were computed and analyzed for all combinations of items within a cluster. On the basis of previous work by Driver and his associates (1977), a correlation (r) of .40 or higher with all other items within a given set across hikers in all four study areas was the general criterion for including an item within the cluster. Minor exceptions were made to this rule when the correlation dropped just slightly below .40

for one of the research areas and when including the item did not cause a drop in the overall internal consistency of the scale. A third step was to compute the average correlation ($\bar{r}$) between all items in the scale. No item causing a scale's average correlation to drop below .40 was included in the scale. Finally, the internal consistency--Cronbach alpha (α)--of each of the tentative scales was computed to obtain an indication of scale reliability.[4] No item was included within a scale if it caused the alpha level to drop below .60. This criterion, too, has its basis in previous work by Driver and his associates (1977).

Unidimensional Recreation Experience Preference Scales

Table 10 lists the 25 unidimensional recreation experience preference scales that met the above criteria, the items which make up each scale, each item's scale and domain in Driver's previous work, and, where appropriate, the correlation coefficients (r) between all items on the scale, and the alpha reliability (α) of each scale. Correlational and reliability measures are reported for each of the four study areas.

Fifteen of the identified scales are identical to those found by Driver and his associates in previous analyses: reinforcing self-image, social recognition, risk taking, risk moderation, risk avoidance, equipment, family togetherness, geography of area, scenery, creativity, nostalgia, exercise/physical fitness, physical rest, privacy, and security.

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[4] Scale reliability is calculated from the formula:

$$\alpha = \frac{K\bar{r}_{ij}}{1 + (K-1)\bar{r}_{ij}}$$ where: K = number of scale items; and $\bar{r}_{ij}$ = average correlation among items.

Table 10. Recreation experience preference scales with correlational and reliability measures by study area.

Scale Name / Item	Driver Scale	Driver Domain
1. Reinforcing self-image		
3. Gaining a sense of self-confidence	Reinforcing self-image	Achievement
2. Social recognition		
20. Showing others you can do it	Social recognition	Achievement
3. Skill testing and development		
33. Becoming better at it	Skill development	Achievement
42. Testing your abilities	Confidence testing	Achievement
53. Developing your skills and abilities	Skill development	Achievement
56. Learning what you are capable of	Confidence testing	Achievement

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	33	42	53	33	42	53	33	42	53	33	42	53
42	.74			.58			.53			.67		
53	.66	.70		.57	.69		.66	.73		.72	.75	
56	.60	.73	.65	.53	.69	.63	.51	.58	.59	.62	.70	.69
	$\bar{r}$=.68	α=.89		$\bar{r}$=.61	α=.86		$\bar{r}$=.60	α=.86		$\bar{r}$=.69	α=.90	

Scale Name / Item	Driver Scale	Driver Domain
4. Seeking stimulation		
26. Experiencing new and different things	Exploration	General learning
49. Experiencing excitement	Seeking stimulation	Achievement

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.50	.46	.42	.36

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
5. Independence/Autonomy		
4. Feeling your independence	Independence	Ldrship/Autonomy
21. Being your own boss	Autonomy	Ldrship/Autonomy
50. Being on your own	Independence	Ldrship/Autonomy
54. Being free to make your own choices	Autonomy	Ldrship/Autonomy
55. Trying to experience some of what the pioneers did	(new item)	(new item)

	Linville Gorge				Shining Rock				Joyce Kilmer-Slickrock				Shenandoah			
r	4	21	50	54	4	21	50	54	4	21	50	54	4	21	50	54
21	.44				.44				.53				.53			
50	.38	.48			.42	.51			.67	.67			.61	.53		
54	.47	.58	.59		.43	.54	.69		.58	.59	.63		.55	.58	.71	
55	.37	.36	.42	.49	.42	.36	.48	.59	.46	.63	.52	.60	.42	.44	.49	.52
	$\bar{r}$=.46		α=.81		$\bar{r}$=.49		α=.83		$\bar{r}$=.59		α=.88		$\bar{r}$=.54		α=.85	

6. Teach others		
34. Teaching your outdoor skills to others	Teaching-sharing skills	Ldrship/Autonomy
43. Helping direct the activities of others	Leading others	Ldrship/Autonomy
57. Sharing what you have learned with others	Teaching-sharing skills	Ldrship/Autonomy

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	34	43	34	43	34	43	34	43
43	.48		.57		.52		.59	
57	.66	.52	.65	.59	.71	.56	.57	.46
	$\bar{r}$=.55	α=.79	$\bar{r}$=.61	α=.82	$\bar{r}$=.60	α=.82	$\bar{r}$=.54	α=.78

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
7. Risk taking		
5. Taking risks	Risk-taking	Risk-taking
44. Chancing dangerous situations	Risk-taking	Risk-taking

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.64	.76	.76	.65

8. Risk moderation		
22. Being near others who could help if you need them	Risk moderation	Risk-taking
51. Knowing others are nearby	Risk moderation	Risk-taking

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.46	.58	.45	.46

9. Risk avoidance		
35. Avoiding the unexpected	Risk avoidance	Risk-taking
10. Equipment		
6. Testing and using your equipment	Equipment	Equipment
11. Family togetherness		
7. Doing something with your family	Family togetherness	Family togetherness
23. Bringing your family closer together	Family togetherness	Family togetherness

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.75	.60	.73	.74

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
12. Being with friends		
8. Being with other members of your group	Being with friends	Being with people
24. Being with people having similar values	Being with similar people	Being with people
36. Being with friends	Being with friends	Being with people

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	8	24	8	24	8	24	8	24
24	.37		.47		.40		.38	
36	.69	.41	.68	.52	.38	.33	.64	.33
	$\bar{r}$=.49	α=.74	$\bar{r}$=.56	α=.79	$\bar{r}$=.37	α=.64	$\bar{r}$=.45	α=.71

13. Meeting-observing new people		
9. Talking to new and varied people	Meeting new people	Meeting/observing new people
25. Observing other people in the area	Observing other people	Meeting/observing new people

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.45	.59	.64	.34

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
14. Learning/experiencing nature		
10. Learning more about things there	General learning	General learning
27. Being close to nature	General nature experience	Relation. w/nature
45. Studying nature	Learn about nature	General learning
46. Enjoying the sounds and smells of nature	General nature experience	Relation. w/nature
52. Learning more about nature	Learn about nature	General learning

	Linville Gorge				Shining Rock				Joyce Kilmer-Slickrock				Shenandoah			
r	10	27	45	46	10	27	45	46	10	27	45	46	10	27	45	46
27	.43				.38				.20				.45			
45	.52	.51			.55	.57			.39	.41			.51	.60		
46	.48	.64	.60		.43	.70	.67		.20	.42	.62		.47	.57	.63	
52	.45	.55	.78	.51	.50	.57	.79	.63	.59	.39	.75	.55	.64	.58	.75	.56
	$\bar{r}$=.55		α=.86		$\bar{r}$=.58		α=.87		$\bar{r}$=.45		α=.80		$\bar{r}$=.58		α=.87	

15. Geography of area		
37. Getting to know the lay of the land	Geography of area	General learning
16. Scenery		
11. Viewing the scenery	Scenery	Relation. w/nature
38. Viewing the scenic beauty	Scenery	Relation. w/nature

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.61	.70	.66	.62

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
17. Reflect on personal values		
12. Developing personal spiritual values	Spiritual	Reflect on personal values
28. Thinking about your personal values	Introspection	Reflect on personal values
39. Thinking about who you are	Introspection	Reflect on personal values

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	12	28	12	28	12	28	12	28
28	.62		.54		.58		.63	
39	.58	.73	.58	.68	.61	.73	.59	.76
	$\bar{r}$=.64	α=.84	$\bar{r}$=.60	α.82	$\bar{r}$=.64	α=.84	$\bar{r}$=.66	α=.85

18. Creativity		
13. Being creative	Creativity	Creativity
29. Doing something creative, such as sketching, painting, photography, etc.	Creativity	Creativity

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =	.43	.53	.40	.38

19. Nostalgia		
14. Thinking about good times you've had in the past	Nostalgia	Nostalgia

20. Exercise/physical fitness		
15. Getting exercise	Exercise/physical fitness	Exer /phys. fitness
30. Keeping physically fit	Exercise/physical fitness	Exer./phys. fitness

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r =				

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name / Item	Driver Scale	Driver Domain
21. Physical rest		
16. Resting physically	Physical rest	Physical rest
22. Escape personal-social pressure		
17. Releasing or reducing some built-up tensions	Tension release	Escape personal-social pressure
31. Giving your mind a rest	Slow down mentally	Escape personal-social pressure
40. Getting away from the usual demands of life	Escape role overloads	Escape personal-social pressure
47. Having a change from your daily routine	Escape daily routine	Escape personal-social pressure

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	17	31	40	17	31	40	17	31	40	17	31	40
31	.61			.50			.48			.53		
40	.51	.53		.53	.47		.40	.38		.41	.45	
47	.37	.38	.56	.38	.54	.64	.52	.48	.60	.48	.46	.54
	$\bar{r}$=.49	α=.80		$\bar{r}$=.51	α=.81		$\bar{r}$=.48	α=.78		$\bar{r}$=.48	α=.79	

Scale Name / Item	Driver Scale	Driver Domain
23. Escape physical pressure		
18. Experiencing tranquility	Tranquility	Esc. phys. pressure
41. Experiencing more elbow room	Escape crowds	Esc. phys. pressure
48. Being away from noise back home	Escape physical stress	Esc. phys. pressure

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	18	41	18	41	18	41	18	41
41	.45		.41		.27		.47	
48	.54	.58	.32	.51	.42	.56	.44	.53
	$\bar{r}$=.52	α=.77	$\bar{r}$=.41	α=.68	$\bar{r}$=.42	α=.68	$\bar{r}$=.48	α=.73

Table 10. Recreation experience preference scales with correlational and reliability measures by study area (continued).

Scale Name Item	Driver Scale	Driver Domain
24. Privacy 32. Feeling isolated	Privacy	Escape physical pressure
25. Security 19. Being near considerate people	Social security	Security

Of the remaining ten, eight represent simple combinations of two or more of Driver's scales from the same domain: skill testing and development (skill development and confidence testing), independence/autonomy (independence and autonomy), teach others (teaching-sharing skills and leading others), being with friends (being with friends and being with similar people), meeting-observing new people (meeting new people and observing other people), reflecting on personal values (spiritual and introspection), escaping personal-social pressure (tension release, slow down mentally, escape role overloads, and escape daily routine), and escaping physical pressure (tranquility, escape crowds, and escape physical stresses). Since scales within a single domain are related, this collapsing of multiple scales into a single scale does not represent findings sharply divergent from previous work. However, given that the same criteria were used in scale formation here as in previous studies, it does indicate that hikers in the four study areas did not make such fine distinctions among related recreation experience constructs as did recreationists in Driver's earlier work.

The remaining two scales, seeking stimulation and learning/experiencing nature, include items representing separate Driver scales from different domains. As such, they reflect a marked change from previous findings and deserve special consideration. The study scale, seeking stimulation, includes one item, "experiencing excitement," from Driver's original scale of the same name in the achievement domain. However, it also includes the item "experiencing new and different things" from Driver's exploration scale and general learning domain. This item must therefore be considered somewhat unstable.

The study scale, learning/experiencing nature, represents a collapse of the general learning and the learn about nature scales of the general learning domain. However, while it does not include the exploration and geography of the area scales from that domain, it does include the general nature experience scale items from the relationships with nature domain. Thus, hikers in the study did not view relating to nature as distinctly different from the general learning construct. This finding casts doubt upon Driver's previous specification and location of the general nature experience construct.

Recreation Experience Preference Scale Scores

Calculation of REP Scale Scores.

A respondent's score on a REP scale was determined by adding across the items of the scale and dividing the sum by the number of items in the scale. If an individual failed to answer one or more items in the scale, he was eliminated from this analysis.

Linville Gorge.

Table 11 contains the recreation experience preference scale scores for Linville Gorge overnight and day hikers. While all 25 experience constructs were viewed as adding at least somewhat to satisfaction with the hike, scenery, learning/experiencing nature, exercise/physical fitness, escape physical pressure, and escape personal-social pressure were rated most important. Hikers rated risk avoidance, risk moderation, meeting-observing new people, and social recognition as least important.

The mean scores indicate that overnight hikers scored higher on all scales except one: family togetherness. However, when the scale scores were submitted to a student's t-test for differences of means, the only

Table 11. Recreation experience preference scale scores of Linville Gorge overnight and day hikers.[1]

Scale	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Reinforcing self-image[2]	138	6.63	1.36	7	102	6.06	1.43	9
2. Social recognition	137	4.58	1.79	22	101	4.54	1.43	22
3. Skill testing and development[2]	134	6.40	1.11	11	98	6.00	1.19	11
4. Seeking stimulation	135	6.70	1.06	6	100	6.48	1.16	6
5. Independence/autonomy	136	6.08	1.09	14	100	5.87	1.09	13
6. Teach others	137	5.53	1.18	20	100	5.32	1.36	20
7. Risk taking	137	5.09	1.85	21	99	4.70	1.56	21
8. Risk moderation	135	4.36	1.45	24	99	4.27	1.29	23
9. Risk avoidance	135	4.32	1.79	25	98	4.26	1.71	24
10. Equipment	137	5.62	1.32	17	102	5.36	1.36	19
11. Family togetherness	135	5.54	1.62	19	100	5.72	1.49	14
12. Being with friends	138	6.41	1.10	10	100	6.14	1.24	8
13. Meeting-observing new people	138	4.55	1.56	23	102	4.28	1.57	25
14. Learning/experiencing nature	132	7.01	0.87	2	97	6.88	0.80	2
15. Geography of area	138	6.46	1.11	8	102	6.25	1.14	7
16. Scenery[2]	138	7.56	0.58	1	101	7.37	0.66	1
17. Reflect on personal values	135	6.35	1.33	12	101	6.03	1.32	10
18. Creativity	136	5.91	1.22	15	102	5.61	1.21	16
19. Nostalgia	138	5.61	1.59	18	102	5.44	1.42	18
20. Exercise/physical fitness	138	6.97	1.13	3	102	6.76	1.09	4
21. Physical rest	136	5.79	1.74	16	101	5.59	1.55	17
22. Escape personal-social pressure	135	6.77	1.02	5	98	6.62	0.99	5
23. Escape physical pressure	138	6.90	1.03	4	101	6.80	0.95	3
24. Privacy[2]	138	6.44	1.43	9	101	5.97	1.58	12
25. Security[2]	138	6.21	1.54	13	101	5.66	1.57	15

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

[2]Student's t-test indicated a significant difference between overnight and day hikers at p = .05.

significant differences (p = .05) between the two groups of hikers were on the scenery, skill testing and development, privacy, reinforcing self-image, and security constructs.

Shining Rock. The recreation experience preference scale scores of Shining Rock overnight and day hikers are listed in Table 12. As was the case with Linville Gorge hikers, all 25 psychological outcomes were viewed as contributing somewhat to satisfaction with the hiking experience. Also, the same scales were rated most important (scenery, learning/experiencing nature, escape physical pressure, escape personal-social pressure, and exercise/physical fitness) and least important (risk moderation, risk avoidance, risk taking, social recognition, and meeting-observing new people).

A Student's t-test for mean differences indicated that overnight hikers scored significantly higher than day users on 11 of the 25 scales: reinforcing self-image, skill testing and development, seeking stimulation, independence/autonomy, teach others, risk taking, equipment, being with friends, reflect on personal values, creativity, and privacy. This finding suggests that there are more differences between the two hiking groups in Shining Rock than in Linville Gorge. Also, qualitative differences exist. Linville Gorge overnight and day hikers differed on the scenery and security scales; Shining Rock hikers did not.

Joyce Kilmer-Slickrock. Table 13 contains the recreation experience preference scale scores of Joyce Kilmer-Slickrock day and overnight hikers. While the small sample size reduces confidence in our findings, mean scores indicate that all of the psychological constructs except two (risk taking and risk avoidance for day hikers) added at least somewhat

Table 12. Recreation experience preference scale scores of Shining Rock overnight and day hikers.[1]

Scale	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Reinforcing self-image[2]	194	6.44	1.41	8	65	5.95	1.30	9
2. Social recognition	192	4.33	1.71	23	66	4.42	1.45	22
3. Skill testing and development[2]	191	6.35	1.13	9	64	5.57	0.98	13
4. Seeking stimulation[2]	191	6.52	1.13	6	64	6.02	1.20	8
5. Independence/autonomy[2]	191	6.18	1.11	13	62	5.40	1.03	17
6. Teach others[2]	187	5.48	1.29	20	64	4.88	1.24	20
7. Risk taking[2]	193	4.65	1.93	21	64	4.08	1.87	25
8. Risk moderation	194	4.14	1.60	25	63	4.21	1.32	24
9. Risk avoidance	190	4.25	1.75	24	64	4.55	1.65	21
10. Equipment[2]	194	5.58	1.38	18	65	4.91	1.26	19
11. Family togetherness	190	5.83	1.45	15	62	6.05	1.52	7
12. Being with friends[2]	193	6.24	1.16	12	63	5.68	1.27	12
13. Meeting-observing new people	194	4.49	1.65	22	65	4.38	1.58	23
14. Learning/experiencing nature	189	6.96	0.87	2	63	6.74	0.91	2
15. Geography of area	193	6.44	1.29	7	65	6.12	1.19	6
16. Scenery	193	7.45	0.76	1	65	7.49	0.64	1
17. Reflect on personal values[2]	192	6.29	1.27	10	63	5.77	1.36	10
18. Creativity[2]	194	5.81	1.32	16	65	5.21	1.28	18
19. Nostalgia	194	5.55	1.53	19	67	5.51	1.54	15
20. Exercise/physical fitness	195	6.81	1.11	5	65	6.73	1.16	3
21. Physical rest	193	5.68	1.70	17	65	5.54	1.57	14
22. Escape personal-social pressure	193	6.84	0.95	4	66	6.58	1.04	5
23. Escape physical pressure	191	6.93	0.97	3	64	6.69	0.99	4
24. Privacy[2]	194	6.29	1.49	11	65	5.75	1.60	11
25. Security	193	5.87	1.64	14	64	5.50	1.64	16

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

[2]Student's t-test indicated a significant difference between overnight and day hikers at p = .05.

Table 13. Recreation experience preference scale scores of Joyce Kilmer-Slickrock overnight and day hikers.[1]

Scale	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Reinforcing self-image[2]	62	6.35	1.36	10	18	5.50	1.62	16
2. Social recognition	62	4.60	1.79	21	18	4.00	1.64	23
3. Skill testing and development[2]	59	6.30	1.03	12	16	5.59	1.40	14
4. Seeking stimulation	62	6.63	1.01	6	17	6.24	1.13	8
5. Independence/autonomy[2]	62	6.14	1.02	14	17	5.11	1.63	17
6. Teach others	62	5.15	0.92	20	17	5.00	1.65	18
7. Risk taking	62	4.53	1.95	22	17	3.76	1.78	25
8. Risk moderation	61	4.37	1.48	24	17	4.26	1.65	22
9. Risk avoidance	61	4.30	1.51	25	17	3.94	1.64	24
10. Equipment[2]	62	5.66	1.16	18	18	4.56	1.76	20
11. Family togetherness	61	6.00	1.52	15	18	5.86	1.40	12
12. Being with friends	62	6.35	0.99	11	17	6.24	1.00	7
13. Meeting-observing new people	62	4.48	1.69	23	18	4.36	2.04	21
14. Learning/experiencing nature	62	7.16	0.72	2	17	7.24	0.63	3
15. Geography of area	62	6.52	1.21	7	17	5.94	1.34	11
16. Scenery	62	7.67	0.57	1	17	7.79	0.44	1
17. Reflect on personal values	62	6.52	1.30	8	17	6.08	1.06	10
18. Creativity	62	5.86	1.23	16	18	5.75	1.55	13
19. Nostalgia	62	5.52	1.38	19	18	5.50	1.25	15
20. Exercise/physical fitness	62	7.15	0.98	3	18	7.28	0.83	2
21. Physical rest	61	5.80	1.87	17	18	4.83	2.48	19
22. Escape personal-social pressure	62	6.87	0.83	5	17	6.41	1.03	5
23. Escape physical pressure	61	7.10	0.93	4	16	7.02	1.04	4
24. Privacy	62	6.40	1.30	9	17	6.29	1.16	6
25. Security	62	6.18	1.43	13	18	6.11	1.81	9

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

[2]Student's t-test indicated a significant difference between overnight and day hikers at p = .05.

to the recreational experience. Also, Joyce Kilmer-Slickrock hikers rated the importance of the scales very similarly to the ratings of Linville Gorge and Shining Rock hikers. For example, scenery, learning/experiencing nature, exercise/physical fitness, escape physical pressure, and escape personal-social pressure were again rated most important. The three risk scales, meeting-observing new people, and social recognition were again the least important.

A Student's t-test indicated four significant differences ($p = .05$) between overnight and day hikers on the scales. Overnight hikers rated reinforcing self-image, skill testing and development, independence/autonomy, and equipment as more important to their experience. Three other mean differences were quite large and were significant at the $p = .10$ level: geography of the area, physical rest, and escape personal-social pressure.

Shenandoah. Table 14 contains the experience preference scale scores for Shenandoah hikers. Again, all experience constructs were viewed as contributing at least somewhat to satisfaction with the hike. Once again, the same five scales were rated most important (scenery, exercise/physical fitness, learning/experiencing nature, escape physical pressure, and escape personal-social pressure), and the same three risk constructs plus social recognition and meeting-observing new people were least important.

Overnight hikers scored higher on nine of the ten significant differences ($p = .05$) in mean scale responses found by Student's t-tests: reinforcing self-image, skill testing and development, independence/autonomy, risk taking, reflect on personal values, creativity, escape

Table 14. Recreation experience preference scale scores of Shenandoah overnight and day hikers.[1]

Scale	Overnight Hikers				Day Hikers			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Reinforcing self-image[2]	106	6.62	1.37	6	173	5.81	1.41	14
2. Social recognition	105	4.61	1.71	23	174	4.71	1.45	22
3. Skill testing and development[2]	100	6.33	1.11	9	171	5.88	1.13	13
4. Seeking stimulation	100	6.54	1.28	7	170	6.63	1.02	6
5. Independence/autonomy[2]	100	6.29	1.14	12	172	5.72	1.16	16
6. Teach others	101	5.25	1.15	20	173	5.17	1.17	19
7. Risk taking[2]	103	5.15	1.81	21	171	4.64	1.71	24
8. Risk moderation	104	4.39	1.54	24	172	4.69	1.43	23
9. Risk avoidance	105	4.24	1.90	25	169	4.36	1.79	25
10. Equipment[2]	106	5.74	1.63	17	169	5.15	1.32	20
11. Family togetherness[2]	103	5.74	1.58	16	171	6.37	1.35	7
12. Being with friends	103	6.30	1.08	11	170	6.32	1.02	8
13. Meeting-observing new people	104	4.93	1.42	22	171	5.08	1.36	21
14. Learning/experiencing nature	104	6.96	0.98	3	166	6.93	0.79	3
15. Geography of area	104	6.28	1.38	13	173	6.18	1.22	10
16. Scenery	104	7.54	0.71	1	172	7.59	0.57	1
17. Reflect on personal values[2]	101	6.50	1.37	8	169	5.96	1.39	11
18. Creativity[2]	105	6.09	1.20	14	172	5.69	1.29	17
19. Nostalgia	106	5.73	1.67	18	171	5.80	1.57	15
20. Exercise/physical fitness	106	6.95	1.16	4	174	6.98	0.97	2
21. Physical rest	105	5.67	1.88	19	170	5.89	1.58	12
22. Escape personal-social pressure	103	6.90	1.02	5	170	6.73	0.95	5
23. Escape physical pressure[2]	101	7.15	1.04	2	172	6.80	1.01	4
24. Privacy[2]	105	6.31	1.81	10	172	5.64	1.74	18
25. Security	104	6.08	1.66	15	170	6.28	1.41	9

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

[2]Student's t-test indicated a significant difference between overnight and day hikers at p = .05.

physical pressure, and privacy. Day users rated family togetherness as significantly more important.

Differences in Experience Preference Scale Scores Between Areas

The analysis of variance procedure was used to test for differences in response to the 25 REP scales among the four study areas. Significant differences ($p = .05$) were found on eight of the scales: risk taking, risk moderation, family togetherness, meeting-observing new people, scenery, exercise/physical fitness, privacy, and security (see Table 15). In addition, Duncan's multiple range tests were performed to determine which area(s) differed ($p = .05$) from the others. This testing procedure indicated that Shenandoah and Linville Gorge hikers scored significantly higher on the risk taking scale than did Shining Rock and Joyce Kilmer-Slickrock users. At the same time, Shenandoah hikers viewed risk moderation as more important than did Shining Rock hikers. Shenandoah hikers also rated family togetherness as more important than did Linville Gorge users. Also, Shenandoah hikers viewed meeting-observing new people as contributing more, and privacy as contributing less, toward satisfaction than did users of the other three areas. Joyce Kilmer-Slickrock users scored significantly higher on the scenery and exercise/physical fitness scales than did Shining Rock hikers. Finally, Shenandoah, Joyce Kilmer-Slickrock, and Linville Gorge hikers scored significantly higher than Shining Rock hikers on the security construct.

Because of the many significant differences in REP scale responses of overnight and day users and because of the different ratios of day and overnight hikers in the four study areas, a check was made to see if area differences were in fact due to differing numbers of day versus overnight

Table 15. Recreation experience preference scales with significant differences by area.[1]

Scale	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Risk taking	4.92	1.73	4.48	1.88	4.37	1.93	4.84	1.75
Risk moderation	4.32	1.38	4.21	1.54	4.35	1.51	4.58	1.47
Family togetherness	5.61	1.56	5.93	1.47	5.97	1.49	6.13	1.47
Meeting-observing new people	4.44	1.57	4.46	1.63	4.46	1.76	5.04	1.38
Scenery	7.48	0.62	7.46	0.73	7.70	0.55	7.58	0.62
Exercise/physical fitness	6.89	1.11	6.80	1.11	7.18	0.95	6.98	1.04
Privacy	6.24	1.52	6.17	1.59	6.38	1.26	5.90	1.78
Security	5.99	1.57	5.74	1.69	6.16	1.51	6.21	1.51

[1]Significant differences at p = .05 using the ANOVA procedure.

users. A two-way analysis of variance on REP scale scores by area by overnight versus day hikers indicated that there was a significant interaction between the two predictor variables on the risk taking and security variables (i.e., a significant portion of the area differences in risk taking and security scores could be explained by the overnight and day-user variable).

Conclusions

The following conclusions can be drawn from the study data on the REP scales:

1. The REP scales as previously specified by Driver and his associates were generally confirmed. Where differences were found, the study scales tended to represent combinations of the original Driver scales from the same domain.
2. All 25 REP scales were generally viewed as contributing at least somewhat to satisfaction with the hiking experience.
3. The same REP scales were rated most important and least important across overnight versus day users and across the four study areas.
4. Overnight hikers tended to score significantly higher than day hikers on reinforcing self-image, skill testing and development, independence/autonomy, and privacy across all four study areas.
5. Several differences in strength of the REP scale scores were found by study area. Shenandoah hikers scored higher on risk moderation, family togetherness, meeting-observing new people, and security than hikers in one or more of the remaining three wilderness areas. Given that Shenandoah National Park represents a general vacation destination site for the American public, these findings have intuitive

appeal. On the other hand, the higher risk taking scores at Shenandoah than at Shining Rock and Joyce Kilmer-Slickrock were not expected.

Objective 3

To cross-check the findings of the REP scales regarding relative importance of psychological outcomes with another psychological scaling technique.

Description of Alternate Scaling Procedure

To assess convergent validity, three different scaling techniques were used to measure the recreation experience preferences of Shenandoah hikers. In addition to the standard Likert-type scaling used by Driver and his associates, the Thurstone Scaling Method of Paired Comparisons and Rank Order Scaling were used. The method of paired comparisons appears to have several advantages. Previous research utilizing the standard REP scales suggests that individuals engaged in a given recreational activity tend to rate many different psychological outcomes as very important products of the experience (Roggenbuck and Schreyer, 1977), and this was again found to be true in this study. This may be a valid assessment of preferences, but it may also be a response set. Also, by its intrinsic characteristics, the Likert-type scale may not be the best tool to make fine distinctions among the relative importance of various psychological outcomes. The paired comparison routine, based as it is on the law of comparative judgments, appears less susceptible to these problems. Also, Thurstone's method represents an interval scale and thus not only provides for a ranking of stimuli in terms of some characteristic or quality, but also gives estimates of the scale differences among these stimuli (Thurstone, 1948).

A disadvantage of the paired comparison routine is the large number of judgments required of the study participant when dealing with many stimuli. All possible pairs are compared, and the number of judgments is given by $\frac{n(n-1)}{2}$, where n is the total number of stimuli. Thus, if study participants were asked to assess the relative importance of ten psychological outcomes, 45 decisions must be made. If the number of stimuli were 15, 105 decisions would be required.

The rank order scaling procedure, which represents a type of comparative judgment scaling, appears much less laborious for the study participant. It was used among a subset of Shenandoah hikers, both as a check on validity of the REP scales and as a check on its apparent greater practical utility in field research.

Development of Scale Items

Because of the constraints on the number of stimuli imposed by the paired comparison scaling routine, only ten of the Driver scales were included in our assessment of convergent validity. They were relationships with nature, physical stresses/escape crowds, learning, discovery, escape personal/social pressures, physical fitness, social contact, family togetherness, competence/development and testing, and freedom/independence-autonomy. These ten experience preferences have been found by Driver (1978) and his associates to contribute most to satisfaction of wilderness users (presumably most hikers) in the Weminuche, Rawah, and Eagles Nest Wilderness areas in Colorado. The Driver items selected to represent these scales and the item written to represent each scale in the paired comparison and rank order routines are included in Table 16. The paired comparison and rank order scales as they appeared in the

Table 16. Recreation experience preference scales and items included in the Likert, paired-comparison, and rank order assessment of convergent validity.

Scale	Driver Items (Likert)	Paired Comparison and Rank Order Items
1. Relationship with nature	Viewing the scenery Viewing the scenic beauty Being close to nature Enjoying the sounds and smells of nature	Enjoying the scenery and the smells and sounds of nature
2. Physical stressors/ escape	Feeling isolated Being away from noise back home Experiencing tranquility	Being away from other people and noise and congestion
3. Learning	Learning more about things there Studying nature Learn more about nature	Learning more and developing your knowledge
4. Discovery	Experiencing new and different things Getting to know lay of land	Exploring and experiencing new and different things
5. Escape personal/social pressure	Releasing or reducing some built-up tensions Giving your mind a rest Getting away from the usual demands of life Having a change from your daily routine	Getting away for a while to reduce tensions and rest your mind
6. Physical fitness	Getting exercise Keeping physically fit	Getting exercise to help keep physically fit
7. Social contact	Being with other members of your group Being with friends Being with people having similar values	Being with your friends or people with similar values
8. Family togetherness	Doing something with your family Bringing your family closer together	Doing something with your family

Table 16. Recreation experience preference scales and items included in the Likert, paired-comparison, and rank order assessment of convergent validity (continued).

Scale	Driver Items (Likert)	Paired Comparison and Rank Order Items
9. Competence/ development and testing	Becoming better at it Developing your skills and abilities Testing your abilities Learning what you are capable of	Developing and testing your skills and abilities
10. Freedom/ independence-autonomy	Feeling your independence Being on your own Being your own boss Being free to make your own choices	Being on your own and making your own choices

study questionnaire are contained in Appendices D and E, respectively.

Assignment of Scales to Study Participants

Assignment of a scaling version to a Shenandoah hiker was carried out in a systematic random fashion. A list of all study participants was obtained. The first three individuals on the list were assigned the standard REP scale, the fourth was sent the paired comparison version, and the fifth the rank order routine. This cycle was repeated through the list of names. In this manner, 329 hikers received the standard REP scales, and the paired comparison and rank order scales were each sent to 109 hikers. As Table 5 on page 25 indicates, response rates for the three scales were 86.3, 79.8, and 88.1 percent, respectively.

Data Analysis and Results

The recreation experience preferences of Shenandoah hikers were measured using three different scaling procedures for two general reasons. The first was to permit a number of parametric and nonparametric comparisons of scale results to test for convergent validity. The second was to determine the functional relationships between the interval scales of the paired comparison and rank order routines (as derived from Thurstone's Law of Comparative Judgment) and the Likert scales typically used by Driver. This was done by regressing the interval scales against the mean scores on the Likert scales using linear, log, exponential, and power models. One product of this analysis is empirical evidence on the extent to which the Likert scales used in this study provide interval data. While Likert scales are generally assumed to provide interval data, and have been used as such by Driver and his associates (e.g., Driver, 1976; Driver and Cooksey, 1977), there is little theoretical

support for this supposition (Labovitz, 1970).

The first step in the data analysis process was to compute scale scores for the study participants. This was done for the standard Likert REP scales using the procedure Driver and his associates have used in the past--the arithmetic mean response to all items in a scale was calculated. If an individual failed to answer any one item, he was excluded from further analysis.

Paired comparison and rank order scale scores were determined by generating a matrix of proportions indicating preference for each item (or scale--since each scale has one item) over each of the others. Thurstone's Law of Comparative Judgment states that scale separation is proportional to the standardized z score derived from the proportion of comparisons in which one item is preferred over another on a specific dimension (Buhyoff and Wellman, 1980). In his original statement of the law in 1927, Thurstone proposed that since a given standard stimulus will not trigger the same response each time it is presented, then the mean of this distribution of discriminal responses is the best scale value estimate for the stimulus. Since it is impossible to scale response magnitudes directly, the overlap of the discriminal distributions of two scale scores may be converted to a standard normal deviate (z) score to represent the scale separation between two items (Buhyoff and Riesenman, 1979). Various assumptions about the data can be made in the calculation of z scores. Case III assumptions (see Guilford, 1954) were made in our data analysis because estimates of dispersion in item response were available, and Case III scale scores were computed for both the paired comparison and rank order routines (see Table 17). A chi-square test

Table 17. Recreation experience preference scale scores and ranks utilizing Likert, paired comparison, and rank order scaling procedures.

Scale	Likert (N=280)		Paired Comparison (N=67)		Rank Order (N=83)	
	Score[1]	Rank	Score[1]	Rank	Score[1]	Rank
Relationship with nature	1.46	1	1.92	1	2.19	1
Physical stressors/ escape crowds	.95	3	.50	7	1.28	2
Freedom/independence-autonomy	.00	10	.00	10	.08	9
Discovery	.85	4	1.50	2	1.01	3
Competence/development and testing	.08	9	.34	9	.17	8
Escape personal/social pressures	.81	5	1.00	4	.98	4
Family togetherness	.14	8	.38	8	.00	10
Physical fitness	.99	2	.91	5	.72	5
Social contact	.32	7	1.38	3	.58	6
Learning	.72	6	.81	7	.41	7

Kendall's W = .85 (significant at $p < .005$).

[1]Scale scores have been subjected to a linear transformation to make the lowest scale equal .00.

found the two scales to have an adequate degree of internal consistency (i.e., $p \leq .20$).

Scores resulting from the three scaling routines were then analyzed for convergent validity using the Tricor system (Buhyoff, 1979a), which provides both parametric (Pearson's R) and nonparametric (Kendall's W and Spearman's rho) measures of association. Each test also includes an estimate of the significance level of the degree of association.

Nonparametric tests on the rank orders in scale values of the three scaling techniques gave a Kendall's W of .85 (Table 17) and a Spearman's Rho of .72 between the paired comparison and Likert, .75 between rank order and paired comparison, and .88 between rank order and Likert scales (Table 18). Parametric tests on the data yield a Pearson's r matrix with no values under .72 (Table 18). T-tests on the r values found them all to be significant at $p < .01$. The Cronbach alpha for the correlation matrix was .92.

Table 19 contains the models of the various functions used by the computerized program Bestfit (Buhyoff, 1979b) to examine the relationship between the Likert REP scales and the two alternate scaling forms.

Table 20 reports study findings on the functional relationships between the various scaling versions tested, the correlations (Pearson's r) between scales, the level of significance of the correlation, and the standard error of the estimate. The linear model appears to adequately represent the relationships among the scales. With this model, correlations are high and the standard error of the estimate are low. This is especially true for the relationship between the rank order and the Likert scaling procedure. This gives some empirical support for the

Table 18. Correlation of scale values of the Likert, paired comparison, and rank order scaling routines.

	Paired Comparison		Rank Order	
	Spearman's rho	Pearson's r	Spearman's rho	Pearson's r
Likert	.72	.72	.88	.91
Paired Comparison			.75	.76

Table 19. Function models used in examining the relationships between the Likert, paired comparison, and rank order scaling routines.

Function	Model[1]
Linear	$Y = B_0 + B_1X$
Logarithmic	$Y = B_0 + B_1 \ln X$
Power	$Y = B_0X^{B_1}$
	least squares solution form:
	$\ln Y = B_1 \ln X + \ln B_0$
Exponential	$Y = B_0e^{B_1X}$
	least squares solution form:
	$\ln Y = \ln B_0 + B_1X$

[1]Taken from Buhyoff, 1979b.

Table 20. The functional relationships between the Likert, paired comparison, and rank order REP scaling routines.

Model		Paired Comparison (PC) with Likert (L)	Rank Order (RO) with Likert (L)	Paired Comparison (PC) with Rank Order (RO)
Linear	r	.723 $p<.02$	.906 $p<.001$	.757 $p<.015$
	Function	$L = .128 + .576PC$	$L = .149 + .651RO$	$RO = .007 + 8.38PC$
	Standard Error of estimate	.349	.214	.459
Log	r	.574 $p<.10$	.622 $p<.06$	.467 $p<.25$
	Function	$L = .734 + .094\ln PC$	$L = .777 + .102\ln RO$	$RO = .857 + .106\ln PC$
	Standard Error of estimate	.413	.395	.620
Power	r	.973 $p<.001$	.333 $p<.75$	.246 $p<.75$
	Function	$L = .619(PC)^{.954}$	$L = .350(RO)^{.327}$	$RO = .315(PC)^{.245}$
	Standard Error of estimate	.698	2.856	.341
Exponential	r	.658 $p<.04$	.567 $p<.10$	.524 $p<.15$
	Function	$L = .014(e)^{3.14PC}$	$L = .036(e)^{2.45RO}$	$RO = .026(e)^{2.55PC}$
	Standard Error of estimate	2.282	1.258	2.618

assumption that the Likert scaling procedure does provide interval data. The power function also showed a strong relationship between the paired comparison and Likert scaling procedures, but here the standard error of the estimate was somewhat higher.

Conclusions

The following conclusions can be drawn regarding study tests of the validity of the REP scales and their formats as used by Driver and his associates:

1. All three REP scaling routines used had high internal consistency.
2. Relationships among the three scaling formats tested were strong and statistically significant at high probability levels. This indicates high convergent validity.
3. Even higher correlations would have been found among the three scaling procedures had not the ranks of physical stresses/escape crowds and social contact in the paired comparison routine been reversed with respect to the other two scales (see Table 17 on page 69). Further analyses should be carried out to explore reasons for this reversal.
4. The response rates for the paired comparison and rank order scaling treatments were high (79.8 and 88.1 percent, respectively). We used listwise deletion of cases in the calculation of scale scores. When this was done, we lost 23 percent of the paired comparison respondents and 14 percent of the rank order respondents. This appears to be a problem. However, had we used listwise deletion in the Likert scale scoring, we would have lost 17 percent of the cases. Thus, the scaling formats of the three techniques, in themselves, do not appear to differ in difficulty for the respondent.
5. Strong linear functional relationships were found between the three scaling procedures. This suggests that the standard REP scales are providing interval data.

Objective 4

To compare and contrast findings with earlier research findings of RM-1901.

Justification

Under Objective 2 of this report we analyzed the commonalities of response to the REP items across the four study areas and recommended REP clusters or scales which best represented the data. At that time we also made initial comparisons between our REP scale findings and previous findings by Driver and his associates. It is our objective in this section to perform a more thorough analysis of the REP scales as Driver and his associates have prepared them; i.e., to approach the REP scales from a confirmatory mode. While our analysis under Objective 2 showed that the REP scales as Driver has proposed them did not always provide the best fit to our data, our objective here is to determine whether the standard Driver REP scales meet the minimum criteria fit ($r \geq .4$ and $\alpha \geq .6$) for each cluster.

Correlations among Items in Standard Driver REP Scales

Table 21 contains the correlations among the items for each of the four study areas for all those standard Driver REP scales for which we included more than one item. Of the 39 Driver scales included in our study, only 15 had more than one item (see Table 3 on page 20).

Of the 60 r values listed in Table 21, only three were below the minimum criteria of .40. Each of the three r values were .38, and each occurred in a different study area on a different scale (independence for Linville Gorge hikers, being with friends for Joyce Kilmer-Slickrock hikers, and creativity for Shenandoah hikers). Thus, our data provide

Table 21. Correlations between items in standard Driver recreation experience preference scales.

Scale Name Item	Linville Gorge r	Shining Rock r	Joyce Kilmer-Slickrock r	Shenandoah r
Skill development Becoming better at it Developing your skills and abilities	.66	.57	.66	.72
Confidence testing Testing your abilities Learning what you are capable of	.73	.69	.58	.70
Independence Feeling your independence Being on your own	.38	.42	.67	.61
Autonomy Being your own boss Being free to make your own choices	.58	.54	.59	.58
Teaching-Sharing skills Teaching your outdoor skills to others Sharing what you have learned with others	.66	.65	.71	.57
Risk-taking Taking risks Chancing dangerous situations	.64	.76	.76	.65
Risk moderation Being near others who could help you Knowing others are nearby	.46	.58	.45	.46
Family togetherness Doing something with your family Bringing your family closer together	.75	.60	.73	.74
Being with friends Being with other members of your group Being with friends	.69	.68	.38	.64

Table 21. Correlations between items in standard Driver recreation experience preference scales (continued).

Scale Name Item	Linville Gorge r	Shining Rock r	Joyce Kilmer-Slickrock r	Shenandoah r
Learn about nature				
Studying nature Learning more about nature	.78	.79	.75	.75
Scenery				
Viewing the scenery Viewing the scenic beauty	.61	.70	.66	.62
General nature experience				
Being close to nature Enjoying the sounds and smells of nature	.64	.70	.42	.57
Introspection				
Thinking about your personal values Thinking about who you are	.73	.68	.73	.76
Creativity				
Being creative Doing something creative, such as sketching, painting, photography, etc.	.43	.53	.40	.38
Exercise/physical fitness				
Getting exercise Keeping physically fit	.80	.63	.71	.72

very strong confirmatory support of the 15 scales as Driver has proposed them.

Correlations and Reliabilities of Standard Driver REP Domains

In his previous work Driver has placed his REP scales which are related to each other within a central domain of experience preference. For example, the 39 scales included in our study represent 17 preference domains (see Table 3 on page 20). Table 22 provides the results of our test of the correlations among scale items and the reliabilities (Cronback alphas) of the 13 Driver REP domains for which we included more than one item.

Our data generally give strong confirmation of the REP domains as Driver has conceived them. The Family Togetherness, Being with People, Meeting-Observing New People, Reflect on Personal Values, Creativity, Exercise/Physical Fitness, and Escape Personal-Social Pressure domains had adequate (and often high) correlations among items and reliabilities across all four study areas. The General Learning, Relationship with Nature, and Escape Physical Pressure domains were confirmed for Linville Gorge, Shining Rock, and Shenandoah hikers, but some low correlations and/or somewhat low reliabilities were found for Joyce Kilmer/Slickrock users. For example, "experiencing new and different things" and "studying nature" had low correlations with each other and other items in the General Learning domain. "Viewing the scenic beauty" had a low relationship with "enjoying the sounds and smells of nature" in the Relationship with Nature domain, and "feeling isolated" had low correlations with other items in the Escape Physical Pressure domain. Since the sample size of Joyce Kilmer/Slickrock hikers was small, these findings--by

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains.

Domain Name / Items	Scale
Achievement	
3. Gaining a sense of self-confidence	Reinforcing self-image
20. Showing others you can do it	Social recognition
33. Becoming better at it	Skill development
42. Testing your abilities	Confidence testing
49. Experiencing excitement	Seeking stimulation
53. Developing your skills and abilities	Skill development
56. Learning what you are capable of	Confidence testing

Linville Gorge

r	3	20	33	42	49	53
20	.29					
33	.43	.29				
42	.53	.30	.73			
49	.30	.10	.40	.48		
53	.46	.25	.66	.70	.54	
56	.54	.33	.60	.73	.45	.65

$\bar{r}$=.46 α=.86

Shining Rock

r	3	20	33	42	49	53
20	.25					
33	.34	.31				
42	.34	.26	.58			
49	.28	.31	.42	.51		
53	.33	.27	.57	.69	.58	
56	.46	.38	.53	.69	.53	.63

$\bar{r}$=.44 α=.85

Joyce Kilmer-Slickrock

r	3	20	33	42	49	53
20	.29					
33	.37	.16				
42	.44	.30	.53			
49	.36	.26	.23	.49		
53	.52	.19	.66	.73	.41	
56	.61	.45	.51	.58	.51	.59

$\bar{r}$=.44 α=.85

Shenandoah

r	3	20	33	42	49	53
20	.34					
33	.48	.43				
42	.51	.43	.67			
49	.26	.31	.32	.46		
53	.46	.39	.72	.75	.39	
56	.51	.39	.62	.70	.38	.69

$\bar{r}$=.49 α=.87

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name / Items	Scale
Leadership/Autonomy	
4. Feeling your independence	Independence
21. Being your own boss	Autonomy
34. Teaching your outdoor skills to others	Teaching-sharing skills
43. Helping direct the activities of others	Leading others
50. Being your own boss	Independence
54. Being free to make your own choices	Autonomy
57. Sharing what you have learned with others	Teaching-sharing skills

Linville Gorge

r	4	21	34	43	50	54
21	.44					
34	.36	.34				
43	.19	.25	.48			
50	.38	.48	.30	.22		
54	.47	.58	.38	.21	.59	
57	.28	.29	.66	.52	.30	.33

$\bar{r}$=.38 α=.81

Shining Rock

r	4	21	34	43	50	54
21	.44					
34	.18	.32				
43	.05	.27	.57			
50	.42	.51	.29	.21		
54	.43	.54	.31	.22	.69	
57	.17	.27	.65	.59	.25	.36

$\bar{r}$=.37 α=.80

Joyce Kilmer-Slickrock

r	4	21	34	43	50	54
21	.53					
34	.30	.37				
43	.38	.18	.52			
50	.67	.67	.34	.27		
54	.58	.59	.43	.27	.63	
57	.28	.18	.71	.56	.18	.31

$\bar{r}$=.43 α=.84

Shenandoah

r	4	21	34	43	50	54
21	.53					
34	.34	.38				
43	.11	.32	.59			
50	.61	.53	.41	.26		
54	.55	.58	.42	.24	.71	
57	.33	.29	.57	.46	.32	.38

$\bar{r}$=.43 α=.84

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name / Item	Scale
Risk-Taking	
5. Taking risks	Risk-taking
22. Being near others who could help if you need them	Risk moderation
35. Avoiding the unexpected	Risk avoidance
44. Chancing dangerous situations	Risk-taking
51. Knowing others are nearby	Risk moderation

	Linville Gorge				Shining Rock				Joyce Kilmer-Slickrock				Shenandoah			
r	5	22	35	44	5	22	35	44	5	22	35	44	5	22	35	44
22	.15				.05				.06				.16			
35	.15	.16			.04	.31			-.08	.18			.09	.44		
44	.64	.18	.12		.76	.14	.08		.76	-.05	-.11		.65	.17	.11	
51	.07	.46	.15	.07	.01	.58	.28	.06	.04	.45	-.08	.01	.03	.46	.27	.04
	$\bar{r}$=.22		α=.58		$\bar{r}$=.27		α=.65		$\bar{r}$=.18		α=.53		$\bar{r}$=.24		α=.62	

Family Togetherness / Item	Scale
7. Doing something with your family	Family togetherness
23. Bringing your family closer together	Family togetherness

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r	7	7	7	7
23	.80	.72	.71	.72

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name / Item	Scale
Being with People	
8. Being with other members of your group	Being with friends
24. Being with people having similar values	Being with similar people
36. Being with friends	Being with friends

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	8	24	8	24	8	24	8	24
24	.37		.47		.40		.38	
36	.69	.41	.68	.52	.38	.33	.64	.33
	$\bar{r}$=.49	α=.74	$\bar{r}$=.56	α=.79	$\bar{r}$=.37	α=.64	$\bar{r}$=.45	α=.71

Meeting-Observing New People	
9. Talking to new and varied people	Meeting new people
25. Observing other people in the area	Observing other people

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r	9	9	9	9
25	.45	.59	.64	.34

General Learning	
10. Learning more about things there	General learning
26. Experiencing new and different things	Exploration
37. Getting to know the lay of the land	Geography of area
45. Studying nature	Learn about nature
52. Learning more about nature	Learn about nature

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name
Item — Scale

	Linville Gorge				Shining Rock				Joyce Kilmer-Slickrock				Shenandoah			
r	10	26	37	45	10	26	37	45	10	26	37	45	10	26	37	45
26	.34				.50				.41				.48			
37	.40	.39			.49	.47			.45	.39			.38	.39		
45	.52	.41	.45		.55	.40	.36		.39	.16	.30		.51	.45	.46	
52	.45	.51	.50	.78	.50	.49	.36	.79	.59	.25	.35	.75	.64	.51	.46	.75
	$\bar{r}$=.48	α=.82			$\bar{r}$=.49	α=.83			$\bar{r}$=.40	α=.77			$\bar{r}$=.50	α=.84		

Relationships with Nature
- 11. Viewing the scenery — Scenery
- 27. Being close to nature — General nature experience
- 38. Viewing the scenic beauty — Scenery
- 46. Enjoying the sounds and smells of nature — General nature experience

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	11	27	38	11	27	38	11	27	38	11	27	38
27	.33			.50			.40			.39		
38	.61	.48		.70	.57		.66	.38		.62	.59	
46	.38	.64	.49	.45	.70	.52	.46	.42	.13	.37	.57	.55
	$\bar{r}$=.49	α=.79		$\bar{r}$=.57	α=.84		$\bar{r}$=.41	α=.73		$\bar{r}$=.52	α=.81	

Reflect on Personal Values
- 12. Developing personal spiritual values — Spiritual
- 28. Thinking about your personal values — Introspection
- 39. Thinking about who you are — Introspection

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	12	28	12	28	12	28	12	28
28	.62		.54		.58		.63	
39	.58	.73	.58	.68	.61	.73	.59	.76
	$\bar{r}$=.64	α=.84	$\bar{r}$=.60	α=.82	$\bar{r}$=.64	α=.84	$\bar{r}$=.66	α=.85

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name / Item	Scale
Creativity	
13. Being creative	Creativity
29. Doing something creative, such as sketching, painting, photography, etc.	Creativity

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r	13	13	13	13
29	.43	.53	.40	.38

Exercise/Physical Fitness	
15. Getting exercise	Exercise/physical fitness
30. Keeping physically fit	Exercise/physical fitness

	Linville Gorge	Shining Rock	Joyce Kilmer-Slickrock	Shenandoah
r	15	15	15	15
30	.80	.63	.71	.72

Escape Personal-Social Pressure	
17. Releasing or reducing some built-up tensions	Tension release
31. Giving your mind a rest	Slow down mentally
40. Getting away from the usual demands of life	Escape role overloads
47. Having a change from your daily routine	Escape daily routine

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	17	31	40	17	31	40	17	31	40	17	31	40
31	.61			.50			.48			.53		
40	.51	.53		.53	.47		.40	.38		.41	.45	
47	.37	.38	.56	.38	.54	.64	.52	.48	.60	.48	.46	.54
	$\bar{r}$=.49		α=.80	$\bar{r}$=.51		α=.81	$\bar{r}$=.48		α=.78	$\bar{r}$=.48		α=.79

Table 22. Correlations and reliabilities of standard Driver recreation experience preference domains (continued).

Domain Name / Item	Scale
Escape Physical Pressure	
18. Experiencing tranquility	Tranquility
32. Feeling isolated	Privacy
41. Experiencing more elbow room	Escape crowds
48. Being away from noise back home	Escape physical stresses

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	18	32	41	18	32	41	18	32	41	18	32	41
32	.38			.33			.16			.36		
41	.45	.45		.41	.45		.27	.19		.47	.37	
48	.54	.37	.58	.32	.40	.51	.42	.18	.56	.44	.31	.53
	$\bar{r}$=.46		α=.77	$\bar{r}$=.40		α=.73	$\bar{r}$=.30		α=.63	$\bar{r}$=.41		α=.74

themselves--do not provide enough evidence to warrant a recommendation to remove the items in question from their present domains.

There was some evidence across three study areas (Linville Gorge, Shining Rock, and Joyce Kilmer-Slickrock) that item #20, "showing others you can do it," did not belong in the Achievement domain. It may be tapping a "Status" domain that is somewhat different from achievement in the minds of study respondents.

The Leadership/Autonomy domain had lower correlations among items and lower overall reliabilities than virtually all other domains. Item #43, "helping direct the activities of others," did not correlate strongly with most other items in the domain across all four study areas. The data suggest that the scales leading others and teaching-sharing skills might be better removed from the Leadership/Autonomy domain--i.e., the Leadership/Autonomy domain should be split into separate Leadership and Autonomy domains.

Finally, there is strong evidence that the risk-taking, risk moderation, and risk avoidance scales should not be placed in the same domain. Correlations among items in the domain were low and reliabilities tended to be low across all study areas. While all scales deal with risk, it is reasonable that study participants would respond very differently to risk taking and risk avoidance items.

Comparison of the Recreation Experience Preferences of Eastern and Western Wilderness Users

Driver (1977) has reported the mean response of the users of the Weminuche, Rawah, and Eagles Nest Wilderness Areas in Colorado to 48 REP items. Twenty-four of the 48 items used by Driver were included in

our study questionnaire; this permitted a comparison of REP item response of recreationists engaged in the same activity across separate regions of the country.

Table 23 indicates that while the eastern wilderness users tended to have higher mean values on all REP items, the ranking of the relative importance of the items were remarkably similar--both between and within the two regions. The same items tended to be most important and least important across all seven areas of the two regions. For example, being close to nature, enjoying the sounds and smells of nature, having a change from your daily routine, being away from the noise back home, and getting exercise contributed most to satisfaction of all wilderness hikers. Observing other people in the area and the four risk items contributed least to an enjoyable experience.

Where differences in ranking of the REP scales did exist, the differences were as likely to be within as between the two regions. For example, there were as great a difference in ranking of the developing your skills and abilities, avoiding the unexpected, doing something with your family, and having a change from your daily routine items within as between eastern and western areas. Slight differences appeared to exist between the two regions in that western wilderness users tended to rank being with people having similar values, being with other members of your group, and feeling isolated a little higher, and thinking about personal values a little lower, than did their eastern counterparts.

Table 23. Comparison of the recreation experience preferences of eastern and western wilderness users.[1]

Scale / Item	Weminuche		Rawah		Eagles Nest		Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah[2]	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Skill development														
Developing your skills and abilities	5.89	14	5.88	14	5.60	14	6.37	10	6.22	10	6.29	12	6.13	14
Teaching-Sharing skills														
Teaching your outdoor skills to others	5.21	19	5.11	19	5.00	20	5.63	19	5.38	19	5.29	19	5.21	19
Sharing what you have learned with others	5.41	15	5.31	16	5.19	17	5.92	16	5.82	16	5.56	18	5.79	18
Risk taking														
Taking risks	4.53	20	4.48	20	4.60	21	5.10	20	4.63	21	4.69	21	5.12	21
Chancing dangerous situations	4.37	22	4.30	21	4.52	22	4.72	23	4.33	23	4.04	23	4.59	22
Risk moderation														
Being near others who could help if you need them	4.46	21	4.15	22	4.40	23	5.04	22	4.80	20	5.01	20	5.18	20
Risk avoidance														
Avoiding the unexpected	4.01	23	4.10	23	5.28	15	4.29	21	4.34	22	4.22	22	4.32	23
Family togetherness														
Doing something with your family	5.98	13	6.13	12	5.80	13	5.83	17	6.11	13	6.09	16	6.33	10
Being with friends														
Being with other members of your group	6.18	11	6.18	11	6.20	9	6.32	11	6.08	14	6.19	13	6.32	11
Being with similar people														
Being with people having similar values	6.15	12	6.02	13	5.96	11	6.08	14	6.04	15	6.10	15	6.13	14

Table 23. Comparison of the recreation experience preferences of eastern and western wilderness users[1] (continued).

Scale / Item	Weminuche		Rawah		Eagles Nest		Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah[2]	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Observing other people														
Observing other people in the area	3.06	24	3.84	24	3.22	24	3.48	24	3.73	24	3.58	24	4.12	24
Exploration														
Experiencing new and different things	6.91	4	6.79	6	6.50	6	6.70	7	6.68	7	6.81	8	6.84	7
Learn about nature														
Learning more about nature	6.71	7	6.55	7	6.31	8	6.65	8	6.60	9	6.92	6	6.62	8
General nature experience														
Being close to nature	7.37	2	7.31	2	7.12	2	7.39	1	7.40	1	7.56	1	7.37	1
Enjoying the sounds and smells of nature	7.59	1	7.56	1	7.50	1	7.22	2	7.19	2	.741	2	7.27	2
Introspection														
Thinking about your personal values	5.37	17	5.53	15	5.28	15	6.29	12	6.19	11	6.53	10	6.31	12
Exercise/physical fitness														
Getting exercise	6.77	6	6.82	4	6.84	4	6.97	3	6.89	4	7.26	3	7.07	5
Keeping physically fit	6.34	8	6.46	8	6.50	6	6.82	6	6.72	6	7.09	4	6.89	6
Physical rest														
Resting physically	5.23	18	5.16	18	5.10	19	5.72	18	5.71	18	5.58	17	5.82	17
Tension release														
Releasing or reducing some built-up tensions	6.31	9	6.32	10	6.10	10	6.45	9	6.61	8	6.61	9	6.56	9
Escape daily routine														
Having a change from your daily routine	7.12	3	7.18	3	6.91	3	6.92	4	6.96	3	6.89	7	7.13	3

Table 23. Comparison of the recreation experience preferences of eastern and western wilderness users[1] (continued).

Scale Item	Weminuche		Rawah		Eagles Nest		Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah[2]	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Privacy														
Feeling isolated	6.29	10	6.34	9	5.92	12	6.24	13	6.17	12	6.38	11	5.90	16
Escape physical pressure														
Being away from noise back home	6.83	5	6.80	5	6.53	5	6.83	5	6.87	5	7.04	5	7.09	4
Social security														
Being near considerate people	5.41	15	5.26	17	5.16	18	5.99	15	5.74	17	6.16	14	6.21	13

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

[2]Not all of the Shenandoah hikers included in the study used designated wilderness; some simply hiked in the backcountry which is de facto wilderness.

Conclusions

Our confirmatory analysis of the standard Driver REP items, scales, and domains permit the following conclusions:

1. The Driver REP scales tested in this study had adequate to high internal consistency.
2. The Driver REP domains generally had adequate internal consistency. There were three exceptions. There was some evidence that the item, showing others you can do it, did not belong in the Achievement domain and that the Leadership/Autonomy domain should be split into Leadership and Autonomy. There was substantial evidence that the three "risk" scales should each be in separate domains.
3. Response of eastern and western wilderness users (hikers) to the REP scale items tested was remarkably similar.

Objective 5

To type hikers on the basis of their responses to the REP scales.

Justification

Another general purpose of this study was to determine whether hikers with different preferred experiences differed in their behavior and management preferences. This information is needed both to assess the validity of the REP constructs and their usefulness for managers.

Several authors (e.g., Hautaluoma and Brown, 1978) have noted that recreationists typically have not one, but a package of preferred experiences from any given recreational engagement. Our study which demonstrated that hikers value many psychological outcomes confirmed this generalization. It was therefore necessary to "type" the hikers on the basis of their responses to a series of important recreation experience dimensions. Typing a hiker required that his pattern of scores on the REP scales be similar to that of a group of other hikers (thereafter called his type), and that this group's scores be different from other groups' scores.

Procedure

The typing analyses for this study were performed using the SAS cluster procedure (Barr et al. 1976). The procedure performs a hierarchical cluster analysis, based on an algorithm outlined by Johnson (1967). The technique begins by forming one cluster for each observation (in this case an observation is a hiker) in the analysis. The two closest clusters (hikers) in terms of their response to the variables of interest (REP scale scores) are combined into one cluster, then the two closest

of the new set of clusters are combined into a cluster, and so forth. The program computes its own distance matrix; the matrix is Euclidean.

For each step in the process, SAS prints out the number of clusters, the maximum distance between two observations in a cluster, called the maximum diameter of a cluster; the number of distances within clusters; the total number of distances less than the maximum diameter; and the ratio of the last two quantities (Barr et al. 1976).

If the researcher specifies the desired number of clusters, the procedure will print the minimum, average, and maximum distances within and between clusters; a listing of observations within each cluster; and the means of the variables within each cluster.

Four separate clustering analyses were performed in this study--one for each of the study areas. Since most hikers indicated that all 25 REP scales contributed at least somewhat to satisfaction with the hike, all scales were included as variables in the clustering procedure. Also, only hikers in an area who had scores on all 25 dimensions were typed.

The decision on how many hiker clusters or types to include in subsequent analysis must be made by the researcher. Given the exploratory nature of this research, two somewhat counterbalancing decision criteria were used: (1) to have clusters which were as tight as possible and separated in space from other clusters as far as possible; and (2) to have a manageable number of clusters with a fairly large number of hikers in each. An initial decision was to seek approximately ten clusters. To gain some understanding of whether ten or so clusters was an appropriate decision point, analyses were performed to see if hiker clusters

or types differed on the following characteristics: age, sex, education, marital status, income, group size, and length of stay.

Results

Linville Gorge. The 203 hikers included in the Linville Gorge cluster procedure were typed as shown in Table 24. Five of the clusters had fewer than ten hikers and were therefore eliminated from further discussion and analyses. Type 1, containing 80 individuals, scored positively on all 25 REP scales, i.e., all experiences listed added to their recreational experience. These hikers were especially interested in scenery, learning/experiencing nature, escape, and exercise. Social recognition, the risk scales, and meeting-observing new people contributed only slightly to satisfaction. This group, more than any other, typifies the Linville Gorge hiker.

Cluster 3, with 20 hikers, viewed most experiences listed as contributing even more to satisfaction than Group 1. This was especially true for skill testing and development, seeking stimulation, equipment, meeting-observing new people, creativity, nostalgia, physical rest and privacy. It differed in being less interested in social recognition.

Group 4 contained 24 hikers with experience preferences very similar to Group 3. The only major difference was on the social recognition scale. Individuals in Cluster 4 felt that "showing others you can do it" contributed a great deal toward satisfaction.

Cluster 5 with its 45 hikers tended to see most experiences as contributing only slightly to satisfaction. They did value scenery, learning/experiencing nature, exercise/physical fitness, and being with friends. They were about neutral on the risk and social recognition

Table 24. Linville Gorge hikers typed on the basis of their response to recreation experience preference scales.[1]

REP Scales \ Type	1	2	3	4	5	6	7	8	9	10
N(Total=203):	80	5	20	24	45	1	17	9	1	1
Reinforcing self-image	6.4	7.2	7.2	7.4	5.7	7.0	5.7	6.2	4.0	0.0
Social recognition	4.6	4.0	3.5	6.9	4.0	8.0	5.1	2.9	4.0	0.0
Skill testing and development	6.17	7.75	7.13	7.42	5.31	6.75	6.46	5.75	4.25	1.00
Seeking stimulation	6.52	7.80	7.60	7.56	5.78	6.00	6.85	6.67	5.00	2.00
Independence/ autonomy	6.07	7.28	6.58	7.13	5.08	4.80	5.98	5.64	6.60	1.60
Teach others	5.63	4.53	5.93	6.54	4.61	5.00	5.29	4.52	0.33	1.33
Risk taking	4.61	6.90	5.15	6.10	4.57	6.50	5.56	4.00	5.00	4.50
Risk moderation	4.40	2.60	4.53	5.81	4.00	7.50	4.26	2.39	2.00	4.00
Risk avoidance	4.3	3.4	4.9	5.8	3.6	2.0	3.4	4.2	4.0	0.0
Equipment	5.5	7.2	6.4	6.5	4.8	4.0	5.4	5.3	4.0	0.0
Family togetherness	5.63	4.70	6.15	7.04	5.32	0.00	4.97	5.44	0.00	6.00
Being with friends	6.29	4.87	7.05	7.44	6.06	7.33	6.49	4.48	0.00	5.00
Meeting-observing new people	4.46	3.20	5.60	4.85	4.21	6.00	4.06	2.56	0.00	6.00
Learning/experiencing nature	7.04	7.64	7.58	7.48	6.12	6.20	6.98	7.31	6.00	4.40
Geography of area	6.3	7.0	7.3	7.4	5.6	6.0	5.9	6.4	4.0	7.0
Scenery	7.48	7.80	7.83	7.88	7.30	7.00	7.50	7.39	7.50	6.50
Reflect on personal values	6.41	7.20	7.10	7.35	5.21	5.33	5.75	5.56	7.00	0.33
Creativity	5.86	6.20	6.98	6.71	4.48	3.00	5.29	5.61	4.00	6.00
Nostalgia	5.5	5.0	6.8	6.8	4.9	8.0	5.1	3.7	2.0	6.0
Exercise/physical fitness	7.06	8.00	7.60	7.54	6.07	3.00	6.53	7.22	5.50	4.00
Physical rest	5.9	8.0	7.0	7.0	4.7	4.0	3.3	6.2	6.0	4.0
Escape personal-social pressure	6.80	7.55	7.55	7.55	5.76	3.25	6.56	6.58	7.00	3.50
Escape physical pressure	7.10	7.67	7.50	7.53	5.61	3.67	6.82	7.37	6.33	4.67
Privacy	6.3	8.0	7.4	6.8	5.0	5.0	6.9	6.9	8.0	0.0
Security	6.2	4.4	7.0	7.3	5.6	7.0	6.8	3.4	1.0	0.0

[1]Values in the table are mean values on REP scales.

scales. As a whole, this group's pattern of responses resembled that of Group 1. They differed in that Group 5 was much more moderate.

Cluster 7, with 17 hikers, resembled Cluster 5 except that it rated most experiences as contributing more to satisfaction. This was especially true of social recognition, skill testing and development, risk taking, and escape. On the other hand, it rated physical rest as much less important.

Descriptive Differences Among Hiker Types. The analysis of variance procedure and chi-square analysis were used to test for differences among the five types of Linville Gorge hikers on socio-demographic and trip characteristics.

No statistically significant differences ($p \leq .10$) were found for sex, education, marital status, income, and length of stay. However, as Table 25 indicates, age and length of stay did differ by hiker type, and length of stay differed at $p = .11$. Cluster 3 varied from Cluster 4 mostly in terms of its negative rating of the social recognition outcome and was also, on the average, 10 years younger (23.2 versus 34.8 years). Cluster 4, which rated most REP constructs as contributing substantially to satisfaction, had an average party size of 5.75, but Cluster 7, with more moderate positive responses to most REP scales and a negative valuation of risk avoidance and physical rest, averaged only 2.89 persons per group. Finally, Clusters 1 and 5 had about an equal number of day and overnight hikers, but Clusters 3, 4, and 7 had far more multi-day hikers. As has been stated above, the pattern of response of Clusters 1 and 5 to the REP scale was very similar--valuing scenery, learning/experiencing nature, escape, and exercise. The remaining three

Table 25. Significant differences among Linville Gorge hikers typed by response to recreation experience preference scales.

Hiker Type	Age (Mean)	Party Size (Mean)	Length of Stay: Overnight (N)	Length of Stay: Day (N)
1	29.40	4.21	38	39
3	23.21	3.55	17	2
4	34.83	5.75	15	9
5	31.39	4.82	23	22
7	26.29	2.89	12	6
	F value = 4.39 p = .002	F = 2.25 p = .065	chi-square = 13.05 p = .110	

hiker groups rated most experiences, especially skill testing and development, seeking stimulation, and independence/autonomy, much higher.

Shining Rock. The clustering program placed the 245 Shining Rock hikers in nine groups (Table 26). Four of these (Clusters 1, 2, 7 and 9) contained 93 percent of the hikers. The remaining five types each included fewer than 10 persons, so they were eliminated from further discussion and analyses. Cluster 1 contained 79 hikers who tended to view most experiences as adding somewhat to satisfaction. The scenery, learning/experiencing nature, and escape scales were viewed as most important. The group felt that social recognition, risk moderation and avoidance, and meeting-observing new people detracted from satisfaction.

The 63 hikers in Cluster 2 responded somewhat more positively to most of the REP scales than did the Type 1 hikers. They too scored very high on scenery, escape, and exercise scales, but they also placed much importance on family togetherness, being with friends, seeking stimulation, and security. Only risk taking was viewed as detracting from the experience.

Cluster 7 with its 36 people was similar to Type 1 hikers, except that its scores were more extreme. These hikers felt that scenery, exercise, escape, learning, privacy, seeking stimulation, and reinforcing self-image all contributed strongly to satisfaction. Social recognition was viewed as slightly positive, but risk moderation and avoidance and meeting-observing new people detracted from the experience.

The 51 individuals in Cluster 9 felt that every experience listed contributed to satisfaction. Many experiences, e.g., reinforcing self-image, skill testing and development, seeking stimulation, independence/

Table 26. Shining Rock hikers typed on the basis of their response to recreation experience preference scales.[1]

REP Scales \ Type	1	2	3	4	5	6	7	8	9
N (Total=245):	79	63	5	7	1	1	36	2	51
Reinforcing self-image	5.7	6.1	7.2	5.71	0.0	4.0	6.8	6.0	7.0
Social recognition	3.7	4.7	2.2	3.43	0.0	0.0	4.6	6.5	5.5
Skill testing and development	5.38	5.95	5.90	5.07	7.0	6.25	6.58	8.0	7.31
Seeking stimulation	5.68	6.28	5.9	5.07	8.0	5.50	6.81	7.75	7.51
Independence/autonomy	5.24	5.82	6.24	4.91	6.20	3.80	6.53	6.9	7.05
Teach others	4.73	5.34	6.07	3.38	7.67	5.0	5.13	6.67	6.44
Risk taking	4.23	3.46	1.60	3.79	0.0	0.0	5.96	7.25	5.42
Risk moderation	3.75	4.80	1.7	2.08	1.5	4.0	3.32	1.0	5.56
Risk avoidance	3.9	4.3	2.0	5.86	7.0	6.25	3.4	0.0	6.1
Equipment	4.9	5.3	4.4	4.29	6.0	8.0	5.4	8.0	6.5
Family togetherness	5.22	6.52	6.5	5.36	5.0	6.0	5.79	6.00	6.59
Being with friends	5.59	6.54	5.67	3.81	7.0	5.33	5.52	7.0	6.98
Meeting-observing new people	3.89	5.19	4.20	2.36	4.0	6.0	3.26	2.0	5.69
Learning/experiencing nature	6.37	6.85	7.68	7.17	8.0	7.60	7.01	8.0	7.47
Geography of area	5.7	6.3	6.2	5.43	8.0	8.0	6.3	8.0	7.5
Scenery	6.96	7.67	7.6	7.64	8.0	8.0	7.57	8.0	7.73
Reflect on personal values	5.53	6.07	7.67	6.09	5.33	1.33	5.77	8.0	7.30
Creativity	5.03	5.36	7.2	4.71	1.0	2.0	5.67	6.25	6.74
Nostalgia	4.9	5.7	4.6	4.43	8.0	4.0	4.9	8.0	7.1
Exercise/physical fitness	5.80	7.21	7.3	5.86	8.0	7.5	7.22	8.0	7.44
Physical rest	4.6	6.0	6.0	5.57	8.0	5.0	5.4	8.0	6.9
Escape personal-social pressure	6.05	6.92	6.8	6.43	8.0	1.25	6.88	7.75	7.48
Escape physical pressure	6.21	6.86	7.27	6.90	6.67	3.33	7.08	8.0	7.51
Privacy	5.5	5.9	6.8	6.57	8.0	0.0	6.8	8.0	7.0
Security	4.9	6.3	6.8	1.86	3.0	0.0	5.1	8.0	7.2

[1]Values in table are mean values on REP scales.

autonomy, learning/experiencing nature, geography of the area, scenery, reflect on personal values, nostalgia, exercise, escape, privacy, and security all added strongly to satisfaction.

Descriptive Differences Among Hiker Types. As was done with Linville Gorge hikers, analysis of variance and chi-square analyses were performed to see if Shining Rock hiker types differed in socio-economic or trip characteristics.

As Table 27 indicates, the four hiker groups differed ($p \leq .10$) on two of the seven variables tested: length of stay and education. The groups varied in age at $p = .11$. Cluster 2 hikers, who valued scenery, escape, exercise, family togetherness, being with friends, and security and who also felt that risk taking detracted from satisfaction, were somewhat older than hikers in Clusters 7 and 9. Hikers in the latter two groups valued risk taking. The Cluster 9 hikers, who stated that all experiences contributed to satisfaction, had significantly less education than the other three groups. Cluster 9 had the greatest percentage of overnight hikers; Cluster 2 had the lowest. As has been stated, both Clusters 2 and 9 scored high on most REP scales; they differed in that Cluster 2 hikers rated risk taking negatively, and viewed skill testing and development, independence/autonomy, teaching others, equipment, geography of the area, reflect on personal values, creativity, nostalgia, and privacy somewhat less positively.

Table 27. Significant differences among Shining Rock hikers typed by response to recreation experience preference scales.

Hiker Type	Age (Mean)	Education (Mean)	Length of Stay: Overnight (N)	Length of Stay: Day (N)
1	32.62	15.19	57	17
2	34.17	15.16	38	19
7	29.08	15.61	24	9
9	29.04	13.94	41	4
	F = 2.05 p = .107	F = 3.44 p = .018	chi-square=8.70 p = .034	

Joyce Kilmer-Slickrock. The 70 Joyce Kilmer-Slickrock hikers who had scores on all 25 of the REP scales were clustered into nine types (Table 28). Four of the types, Clusters 3, 4, 5, and 6, contained 80 percent of the hikers. The remaining five clusters included four or fewer individuals and were therefore eliminated from further analyses and discussion. Cluster 3 hikers felt that most experiences added slightly or moderately to satisfaction. They valued scenery very much, and had moderately positive responses to escape, exercise, learning/experiencing nature, and family togetherness. They believed social recognition, the risk constructs, and meeting-observing new people detracted from their experience.

Cluster 4 hikers tended to score higher on all REP scales than did Cluster 3 persons. They felt that scenery, learning/experiencing nature, exercise, physical rest, seeking stimulation, escape, and privacy all contributed strongly to most strongly to satisfaction. They scored much higher than Cluster 3 on reinforcing self-image, skill testing and development, seeking stimulation, geography of area, and reflect on personal values. In contrast to Cluster 3, they rated family togetherness lower. Finally, they felt risk moderation and meeting-observing new people detracted from satisfaction.

Cluster 5--with 11 hikers--tended to score between Groups 3 and 4 on the REP scales. Exceptions to this were lower responses to the social recognition, family togetherness, and physical rest scales and more positive responses to the risk taking, being with friends, learning/experiencing nature, geography of the area, and scenery scales. The group felt that only social recognition, risk moderation, and meeting-observing new people detracted from satisfaction.

Table 28. Joyce Kilmer-Slickrock hikers typed on the basis of their response to recreation experience preference scales.[1]

REP Scales \ Type	1	2	3	4	5	6	7	8	9
N (Total=70):	4	1	13	14	11	18	4	4	1
Reinforcing self-image	6.0	4.0	4.62	6.8	6.6	6.9	6.0	6.8	2.0
Social recognition	5.3	2.0	3.69	4.6	3.6	5.0	3.8	8.0	0.0
Skill testing and development	6.31	4.25	5.13	6.84	6.25	6.29	6.31	6.81	2.00
Seeking stimulation	6.38	7.5	5.77	7.12	6.86	6.61	6.63	7.25	4.50
Independence/autonomy	6.3	5.0	4.91	6.27	6.44	6.19	4.8	7.0	0.80
Teach others	4.92	4.0	4.95	5.38	5.03	5.43	5.25	6.0	0.33
Risk taking	5.13	6.0	3.62	5.21	5.45	4.03	0.50	7.0	0.00
Risk moderation	5.13	4.0	3.54	3.82	3.64	5.42	4.0	6.88	5.00
Risk avoidance	3.8	2.0	2.92	4.9	4.2	4.4	6.8	5.3	0.00
Equipment	5.0	2.0	4.85	6.1	5.1	5.7	6.3	6.8	0.00
Family togetherness	5.38	6.0	6.08	5.68	5.55	6.53	6.38	6.0	8.0
Being with friends	6.25	6.0	5.72	5.86	6.79	6.56	6.33	7.75	7.0
Meeting-observing new people	3.63	7.5	3.15	3.96	3.86	5.64	3.88	7.5	6.0
Learning/experiencing nature	7.55	6.60	6.6	7.24	7.55	7.26	7.35	7.3	7.6
Geography of area	7.0	4.0	5.23	6.7	6.9	6.2	7.5	7.5	5.0
Scenery	7.88	7.5	7.27	7.82	7.95	7.64	7.75	8.0	8.0
Reflect on personal values	7.25	5.67	5.48	6.79	6.15	7.19	5.33	5.67	5.0
Creativity	6.13	5.50	5.12	5.86	5.91	6.64	4.38	6.38	2.0
Nostalgia	6.3	4.0	4.46	5.9	5.0	5.8	4.5	7.3	6.0
Exercise/physical fitness	7.38	6.50	6.65	7.64	7.09	7.25	7.25	8.0	6.0
Physical rest	0.50	0.00	5.08	7.4	4.3	6.7	6.0	5.0	5.0
Escape personal-social pressure	6.81	6.5	6.12	7.38	6.91	6.86	6.00	7.19	5.25
Escape physical pressure	7.08	5.67	6.67	7.52	7.24	7.20	5.92	1.42	4.67
Privacy	5.5	8.0	5.46	7.2	7.3	6.0	5.0	7.0	5.0
Security	5.8	4.0	5.0	5.8	6.5	6.5	7.3	7.0	7.0

[1]Values in table are mean values on REP scales.

Cluster 6 with 18 people responded very positively to all REP scales. Learning/experiencing nature, scenery, reflect on personal values, exercise, and escape constructs all added strongly to the experience. The group received highest scores of any cluster on reinforcing self-image, social recognition, teach others, risk moderation, family togetherness, meeting-observing new people, reflect on personal values, creativity, and security. It had low but positive responses to the risk taking and risk avoidance constructs.

Descriptive Differences Among Hiker Types. Analyses of variance and chi-square analyses were performed to test for differences among the four hiker clusters in age, sex, education, income, marital status, party size, and time length of the hike. Given the small number of hikers per cluster, large differences were necessary to reach statistical significance ($p = .10$). Nevertheless, significant differences were found among the groups in age, sex, and marital status (Table 29).

Hiker Type 3, with their slightly to moderately positive responses to most REP scales (including family togetherness) but negative responses to social recognition, risk, and meeting-observing new people, were much older than the remaining three hiker clusters. The Type 3 hikers were also far more likely to be male than were the three groups. This was especially true of Clusters 4 and 6--which had more females than males. As has been stated, Clusters 4 and 6 tended to score high on virtually all REP constraints. Finally, hikers in Cluster 3 tended to be married, but unmarried hikers outnumbered married hikers ten to one in Cluster 5. As Table 29 indicates, Cluster 5 hikers valued risk taking, being with friends, and geography of the area a great deal more and family togetherness much less than did those in Cluster 3.

Table 29. Significant differences among Joyce Kilmer-Slickrock hikers typed by response to recreation experience preference scales.

Hiker Type	Age (Mean)	Sex		Married	
		Male	Female	Yes	No
3	37.38	11	2	8	5
4	29.57	5	9	6	8
5	22.73	7	4	1	10
6	26.78	8	10	6	12
	F = 6.37 p = .001	chi-square=7.86 p = .049		chi-square=7.30 p = .063	

Shenandoah. The 227 Shenandoah hikers who completed all 25 REP scales were placed in eight clusters (Table 30). Three of these, Clusters 5, 7, and 8, contained three or fewer persons; these were eliminated from further discussion and analyses. The retained five clusters included approximately 97 percent of the hikers. The 34 Cluster 1 hikers viewed virtually all recreation experiences as contributing strongly to satisfaction with the hike. They had mean scores of 7.0 or greater on 18 of the 25 REP scales. Their lowest scores were on risk taking and risk moderation, but even these were rated moderately positive.

The ten hikers in Cluster 2 felt that most of the recreation experiences studied added slightly or moderately to satisfaction. They most favored scenery, learning/experiencing nature, exercise/physical fitness, escape, and security. They viewed risk taking and privacy as detracting from the experience.

Cluster 3 hikers, like Cluster 1 hikers, viewed all REP scales positively. However, their scores were lower. In fact, their scores were lower than those of Cluster 2 on the following scales: risk moderation, risk avoidance, equipment, meeting-observing new people, creativity, nostalgia, exercise, physical rest, and security. This group, like many others, valued scenery, learning/experiencing nature, exercise, escape, and seeking stimulation the most.

The 36 hikers in Cluster 4 were similar to those in Cluster 3. They valued scenery, escape, exercise/physical fitness, and privacy very much. They scored lower than Group 3 hikers on teach others, risk moderation, risk avoidance, family togetherness, being with friends, meeting-observing

Table 30. Shenandoah hikers typed on the basis of their response to recreation experience preference scales.[1]

REP Scales \ Type	1	2	3	4	5	6	7	8
N (Total=227):	34	10	58	36	3	82	3	1
Reinforcing self-image	7.00	5.60	6.20	6.90	7.30	5.20	5.00	4.00
Social recognition	6.40	4.50	4.70	4.30	5.70	4.10	1.67	1.00
Skill testing and development	7.16	5.93	6.45	6.33	6.58	5.16	5.42	2.50
Seeking stimulation	7.53	6.05	7.05	6.43	6.83	5.93	7.17	2.50
Independence/autonomy	7.11	5.80	6.44	6.41	5.13	4.94	4.33	3.20
Teach others	6.60	5.17	5.75	4.31	4.89	4.69	4.89	2.33
Risk taking	5.65	2.75	5.59	5.25	4.50	3.91	2.50	1.00
Risk moderation	5.97	5.95	4.93	3.21	5.83	4.37	2.67	4.00
Risk avoidance	6.30	6.10	4.90	3.80	0.30	3.80	1.00	1.00
Equipment	6.50	5.70	5.50	5.60	6.00	4.60	2.33	1.00
Family togetherness	7.26	6.40	6.59	5.33	2.67	5.84	6.33	4.50
Being with friends	7.10	6.30	6.51	5.62	6.67	6.16	6.78	4.33
Meeting-observing new people	6.38	5.70	5.33	4.31	3.67	4.72	5.67	2.50
Learning/experiencing nature	7.78	7.10	7.26	6.84	5.33	6.51	7.07	2.00
Geography of area	7.40	6.30	6.50	5.80	5.00	5.70	5.33	3.00
Scenery	7.91	7.80	7.75	7.52	6.50	7.37	8.00	6.00
Reflect on personal values	7.56	6.10	6.48	6.51	6.56	5.45	1.87	2.67
Creativity	7.35	6.40	6.22	5.71	5.50	5.13	5.67	2.50
Nostalgia	7.50	6.60	5.70	6.30	5.30	5.10	3.00	1.00
Exercise/physical fitness	7.81	7.50	7.09	7.14	7.50	6.48	6.50	2.50
Physical rest	7.50	6.20	5.90	6.10	7.50	5.10	5.67	0.00
Escape personal-social pressure	7.79	6.85	7.07	6.98	6.67	6.17	5.67	2.25
Escape physical pressure	7.71	7.30	7.41	7.15	6.78	6.24	5.33	1.33
Privacy	7.20	2.60	6.30	7.10	5.30	5.10	1.67	1.00
Security	7.30	7.00	6.80	5.30	7.00	5.60	4.00	4.00

[1]Values in table are mean values on REP scales.

new people, and security. They felt that risk moderation and risk avoidance detracted from the experience.

The final group of Shenandoah hikers, Cluster 6, contained 82 individuals. They were similar to Cluster 2 hikers in their slightly to moderately positive scores on most REP scales. They differed from that group in that they had much higher scores on privacy, and less positive scores on independence/autonomy, risk moderation, equipment, meeting-observing new people, creativity, nostalgia, exercise/physical fitness, physical rest, and security. They felt that risk taking and risk avoidance detracted from their experience.

Descriptive Differences Among Hiker Types. The Shenandoah hiker types, as defined by the clustering procedure, appeared to be less different from each other in their recreation experience preferences than were hikers in the other three areas. Analysis of variance and chi-square tests also found fewer differences among the hiker clusters on socio-demographic and trip characteristics.

Of the seven tests run, the groups differed on only education and length of stay (Table 31). Cluster 6 hikers had significantly more education (15.84 years) than did those in Cluster 1 (13.79 years). As Table 30 indicated, Cluster 1 hikers rated all REP scales more positively than did those in Cluster 6. They appeared to be much less discriminating in their evaluation of the contribution of individual experiences to satisfaction.

Cluster 4 differed from the other groups in that it had a far larger percentage of overnight hikers. This group also had a high score on privacy and relatively low scores on family togetherness, being with friends, meeting-observing new people, and security. They also felt that risk

Table 31. Significant differences among Shenandoah hikers typed by response to recreation experience preference scales.

Hiker Type	Education (Mean)	Length of Stay: Overnight (N)	Length of Stay: Day (N)
1	13.79	12	16
2	13.90	4	6
3	14.26	19	36
4	15.26	22	14
6	15.84	22	60
	F = 5.85 p = .0002	chi-square=13.13 p = .011	

moderation and avoidance detracted from their experience. Cluster 6, with lower scores on almost all REP scales, than the other groups, included a far larger percentage of day hikers.

Conclusions

Three general conclusions can be drawn regarding hikers typed on the basis of their recreation experience preferences:

1. When the ten most unique clusters of hikers were identified in a study area, about half contained 80 to 95 percent of the hikers. The remaining hikers were spread throughout the rest of the clusters in numbers too few to be statistically or managerially relevant.
2. There were some common hiker types across study areas. There tended to be one group per area that scored very highly on all REP scales. There was another group which rated virtually all experiences as slightly to moderately positive. Then there were many types which rated the same five or so experiences as very positive, many as moderately positive, and a few as detracting from the experience. The experiences which seemed to most often distinguish one hiker type from another were the risk constructs, privacy, meeting-observing new people, family togetherness, exercise/physical fitness, social recognition, independence/autonomy, skill testing and development, and seeking stimulation.
3. The hiker groups generally varied on about three of the seven socio-economic and trip variables tested. The most common differing characteristics were age and length of stay.

Objective 6

To determine the travel patterns of hikers with different packages of preferred psychological outcomes.

Procedure

As one measure of the validity of the REP constructs, we attempted to determine whether hikers with different packages of preferred experiences also differed in their hiking behavior. We operationalized hiking behavior as the type of trail selected, and we contacted hikers in Shenandoah on trails with differing social, physical, and locational characteristics.

Table 32 lists the eight trails where hikers were sampled. It also gives each trail's milepost along the Skyline Drive, its length in miles, the feet of climb required, difficulty, time required to take the hike, and estimated amount of use on each trail.[5] The White Oak Canyon and Falls trails represent very popular trails to waterfalls which are middle in difficulty and take about four hours round trip. Cedar Run and Elkwallow-Jeremy's Run are estimated to have moderate use, but the latter is much longer, more difficult, and more remote. The four lightly used trails range from the middle difficulty and short Overall Run Falls trail, to the longer Nicholson Hollow trail, to the even longer and more difficult Piney Branch and Wildcat Ridge trails. Table 33, which lists the number of hikers sampled on each trail, tends to confirm the park managers' estimates on amount of use.

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[5]While most hikers sampled on a given trail apparently used only the trail system described here, some undoubtedly used the trail as part of a longer or shorter hike.

Table 32. Characteristics of Shenandoah trails where hikers were contacted.[1]

Trail	Mile Post	Miles	Climb feet	Difficulty[2]	Time Required	Estimated Amount of Use
Piney Branch	22.1	8.3	1725	6	7:25	Light
Overall Run Falls	22.2	3.8	1140	4	3:40	Light
Elkwallow-Jeremy's Run	24.1	11.7	2615	7	10:00	Moderate
Nicholson Hollow	38.4	5.7	130	4	4:20	Light
White Oak Canyon	42.6	4.6	1040	4	4:15	Heavy
Cedar Run	45.6	3.5	1556	4	4:00	Moderate
Falls Trail	81.1	4.8	1410	4	4:35	Heavy
Wildcat Ridge	92.1	6.8	1670	5	6:15	Light

[1]Source of all information in the table except estimated amount of use: Heatwale, Henry. 1978. Guide to Skyline Drive and Shenandoah National Park. Shenandoah Natural History Association, Luray, VA., Bull. No. 9, 226p. Use estimations were provided by Shenandoah National Park managers.

[2]Difficulty of 1 = very easy -- 8 = very difficult.

Table 33. Number of hikers by trail sampled in Shenandoah.

Trails	Number of Days Sampled	Number of Hikers Contacted
Piney Branch	4	29
Overall Run Falls	4	36
Elkwallow-Jeremy's Run	3	43
Nicholson Hollow	3	28
White Oak Canyon	3	149
Cedar Run	3	51
Falls Trail	4	111
Wildcat Ridge	4	24

Results

A chi-square analysis was performed to test for a significant relationship between hiker type and trail selection. As Table 34 indicates, the five groups of Shenandoah hikers differed at $p = .012$. This finding, however, must be accepted with caution, for over 5 percent of the cells had expected counts of less than five people. It is therefore more wise to "look" at the cells closely and to suggest tentative conclusions deserving of further research.

Hiker Groups 2 and 6 seem relatively similar to each other and different from Clusters 1, 3, and 4 in trail selection patterns. This has intuitive appeal in that Groups 2 and 6 were generally alike in their lower REP scores. Group 6, however, valued privacy, but Group 2 did not. Given this, one would expect Group 6 to choose the lightly used trails; Cluster 2 would select high use trails. This did not happen. About half of the hikers in each of the two groups selected the two heavy use trails. A few more of the Cluster 6 hikers selected the lightly used Wildcat Ridge and Piney Branch trails, but a smaller percentage hiked the little-used Nicholson Hollow and Overall Run Falls trails.

Group 4 also had high scores on privacy and relatively low scores on meeting-observing new people. It was anticipated that a greater percentage of this group's hikers would travel the lightly used trails, but this did not happen. Indeed, the opposite occurred. This group tended to select high use trails.

Finally, given that Clusters 1 and 3 tended to value seeking stimulation, skill testing and development, independence/autonomy, geography of the area, and to a certain extent, risk taking, it seemed reasonable

Table 34. Chi-square test for differences in trail selection by Shenandoah hiker type.

Frequency Row pct. Col pct.	Trail[1]								
	1	2	3	4	5	6	7	8	
Hiker type									
1	10	5	4	0	5	3	0	2	29
	34.48	2.35	13.79	0.00	17.24	10.34	0.00	6.90	13.62
	15.15	9.43	22.22	0.00	25.00	25.00	0.00	9.09	
2	2	3	1	3	1	0	0	0	10
	20.00	30.00	10.00	30.00	10.00	0.00	0.00	0.00	4.69
	3.03	5.66	5.56	30.00	5.00	0.00	0.00	0.00	
3	19	14	6	1	1	5	5	6	57
	33.33	24.56	10.53	1.75	1.75	8.77	8.77	10.53	26.76
	28.79	26.42	33.33	10.00	5.00	41.67	41.67	27.27	
4	12	9	0	0	8	1	1	5	76
	33.33	25.00	0.00	0.00	22.22	2.78	2.78	13.89	16.90
	18.18	16.98	0.00	0.00	40.00	8.33	8.33	22.73	
6	23	22	7	6	5	3	6	9	81
	28.40	27.16	8.64	7.41	6.17	3.70	7.41	11.11	38.03
	34.85	41.51	38.89	60.00	25.00	25.00	50.00	40.91	
Total	66	53	18	10	20	12	12	22	213
	30.99	24.88	8.45	4.69	9.39	5.63	5.63	10.33	100.00

chi-square = 47.591 p = .012

[1]Trail 1 = White Oak Canyon; 2 = Falls trail; 3 = Overall Run Falls; 4 = Nicholson Hollow; 5 = Elkwallow-Jeremy's Run; 6 = Piney Branch; 7 = Wildcat Ridge; 8 = Cedar Run.

to expect more hikers in these groups to select the longer and more difficult trails (i.e., Piney Branch, Elkwallow-Jeremy's Run, and Wildcat Ridge). This tended to occur. However, Group 6 also tended to select these trails, and that was not expected.

A possibility exists that hikers in our study selected trails with inadequate information or that some party member other than the respondent made the final trail selection. Indeed, there was some evidence in the data to indicate that both situations occurred. An attempt was made to control for those confounding variables by only including those individuals who had made previous trips to Shenandoah, who had decided upon the trail route at least a day in advance, or who had themselves selected the trail route. When this was done, however, there were too few people in the hiker clusters to warrant even tentative conclusions.

Conclusions

The following can be concluded on the basis of our exploratory research on the relationship between packages of experience preferences and trail route selection:

1. There is tentative evidence that the recreation experience preferences of hikers did relate to their trail selection. However, often this was not in the manner expected.
2. Our measure of hiker behavior may have lacked validity; i.e., hikers may have travelled more or less than the route we believed them to have followed.
3. There is need for better measures of the amount of information the respondent has about the trail system and his role in the route selection process.

4. There is a need for research on the relationship between the multi-dimensional preferences of hikers and their behavior to be better grounded in social-psychological theory.

Objective 7

To determine the preferred environmental features of the back-country or wilderness area by hikers with different packages of preferred psychological outcomes.

Procedure

As another measure of the validity and managerial utility of the REP constructs, we explored the relationship between hikers typed on the basis of their preferred experiences and their preferences for a variety of backcountry or wilderness environmental features. The environmental feature scale included in the study was largely taken from the work of Brown et al., 1977, in the Indian Peaks backcountry of Colorado. Some item changes were necessary to reflect the different environmental characteristics of the East. (See study questionnaire in Appendix C). The scale included 50 items which were believed to tap the following resource attribute dimensions: fish related, dense vegetation, meadow/forest, water related, nuisances, rugged topography, intrusions, wildlife, and rare or unique natural features. Hikers responded to each item in terms of how much it added to or detracted from their satisfaction with the experience.

The correlations (Pearson's r) among environmental feature items in each study area were examined to see if our findings confirmed the previous work by Brown et al., 1977. Evaluation criteria were the same as those used in the assessment of the REP scales: any scale must have an $\bar{r}$ of .40 among items and must also have an overall scale reliability (α)

of .60. Since this research was exploratory, we sometimes lowered our decision criteria somewhat.

Once acceptable environmental feature scales had been formed, we calculated each hiker's score on all scales. This was done by finding the person's average response to all items in the scale. If the individual failed to answer all scale items, he did not receive a score on that particular dimension. The mean scores of all hikers within a study area on all environmental feature scales were then calculated to see which features were most preferred.

Finally, analysis of variance procedures were used to determine whether hikers with different sets of preferred experiences also preferred different environmental features. This was done for each of the four study areas.

Results

Formation of Environmental Feature Scales. Table 35 lists the study's environmental feature scales, their items, and--where appropriate--their correlations, average correlations among items, and scale reliabilities. The 14 scales include 40 of the questionnaire's 50 items, and given their item composition, the scales were named fish related, rugged topography, intrusions, wildlife, nuisance, pioneer, stream related, vegetation, reservoirs, views, wilderness, meadow/forest, natural lakes, and virgin forests. Where measures of internal consistency could be made, all study scales had reliabilities of .60 or greater. A few scales had $\bar{r}$ of slightly lower than .40, but this generally occurred on only one of the four study areas. Two scales, pioneer and stream related, had $\bar{r}$ below .40 for two of the four study areas. These scales must therefore be considered

Table 35. Environmental feature scales with correlations and reliabilities.

Scale Name
Items

Fish related
5. Stocked fish
28. Trout
39. Natural fish populations

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	5	28	5	28	5	28	5	28
28	.47		.35		.48		.64	
39	.29	.64	.07	.56	.43	.70	.46	.76
	$\bar{r}$=.47	α=.73	$\bar{r}$=.33	α=.60	$\bar{r}$=.54	α=.78	$\bar{r}$=.62	α=.83

Rugged topography
6. Lofty ridges
12. Rugged terrain
22. Steep gorges
49. Rock outcroppings

	Linville Gorge			Shining Rock		
r	6	12	22	6	12	22
12	.48			.57		
22	.51	.63		.47	.60	
49	.48	.36	.40	.35	.42	.42
	$\bar{r}$=.48	α=.79		$\bar{r}$=.48	α=.79	

	Joyce Kilmer-Slickrock			Shenandoah		
r	6	12	22	6	12	22
12	.24			.41		
22	.12	.46		.42	.55	
49	.16	.57	.34	.37	.34	.31
	$\bar{r}$=.32	α=.65		$\bar{r}$=.40	α=.73	

Table 35. Environmental feature scales with correlations and reliabilities (continued).

Scale Name
Items

Intrusions
35. Evidence of forest fires
38. Evidence of logging activity
44. Evidence of mining activity
48. Murky or discolored water

	Linville Gorge			Shining Rock		
r	35	38	44	35	38	44
38	.48			.52		
44	.36	.71		.45	.63	
48	.35	.39	.37	.37	.27	.36
	$\bar{r}$=.44	α=.76		$\bar{r}$=.43	α=.75	

	Joyce Kilmer-Slickrock			Shenandoah		
r	35	38	44	35	38	44
38	.36			.41		
44	.36	.73		.36	.68	
48	.36	.52	.30	.43	.30	.37
	$\bar{r}$=.44	α=.76		$\bar{r}$=.43	α=.75	

Wildlife
1. Deer
13. Salamanders
26. Songbirds
33. Small furbearers
37. Wild turkeys
40. Grouse
43. Beaver dams and ponds

	Linville Gorge						Shining Rock					
r	1	13	26	33	37	40	1	13	26	33	37	40
13	.38						.26					
26	.33	.41					.34	.36				
33	.53	.50	.59				.47	.44	.50			
37	.46	.50	.39	.54			.49	.37	.40	.49		
40	.43	.49	.46	.62	.67		.52	.33	.34	.51	.69	
43	.42	.38	.39	.53	.43	.46	.38	.34	.35	.46	.45	.39
		$\bar{r}$=.47		α=.86				$\bar{r}$=.40		α=.82		

Table 35. Environmental feature scales with correlations and reliabilities (continued).

Scale Name
Items

	Joyce Kilmer-Slickrock						Shenandoah					
r	1	13	26	33	37	40	1	13	26	33	37	40
13	.17						.24					
26	.44	.47					.42	.28				
33	.49	.54	.45				.42	.37	.43			
37	.29	.41	.31	.53			.39	.33	.41	.51		
40	.25	.53	.35	.54	.64		.41	.37	.38	.56	.59	
43	.23	.50	.38	.43	.40	.55	.39	.27	.41	.42	.39	.52
		$\bar{r}$=.42		α=.84				$\bar{r}$=.39		α=.84		

Nuisance
7. Bear
8. Dense undergrowth
19. Snakes
23. Insects

	Linville Gorge			Shining Rock			Joyce Kilmer-Slickrock			Shenandoah		
r	7	8	19	7	8	19	7	8	19	7	8	19
8	.43			.52			.58			.49		
19	.54	.44		.47	.43		.49	.40		.41	.46	
23	.30	.38	.54	.22	.36	.50	.31	.46	.53	.24	.38	.52
	$\bar{r}$=.44	α=.76		$\bar{r}$=.42	α=.74		$\bar{r}$=.46	α=.77		$\bar{r}$=.42	α=.74	

Pioneer
3. Old cabins
9. Old roads
15. Old apple trees

	Linville Gorge		Shining Rock		Joyce Kilmer-Slickrock		Shenandoah	
r	3	9	3	9	3	9	3	9
9	.48		.37		.49		.37	
15	.41	.34	.40	.23	.54	.33	.30	.26
	$\bar{r}$=.41	α=.68	$\bar{r}$=.33	α=.60	$\bar{r}$=.45	α=.71	$\bar{r}$=.31	α=.57

Table 35. Environmental feature scales with correlations and reliabilities (continued).

Scale Name
Items

Stream Related
11. Large roaring streams
16. Cascading streams
21. Waterfalls
25. Springs
27. Streams of different sizes

	Linville Gorge				Shining Rock			
r	11	16	21	25	11	16	21	25
16	.62				.50			
21	.59	.70			.51	.55		
25	.42	.54	.57		.25	.39	.44	
27	.46	.59	.55	.67	.38	.66	.52	.46
	$\bar{r}$=.57		α=.87		$\bar{r}$=.47		α=.82	

	Joyce Kilmer-Slickrock				Shenandoah			
r	11	16	21	25	11	16	21	25
16	.38				.51			
21	.24	.46			.44	.52		
25	.24	.41	.44		.30	.30	.26	
27	.22	.36	.34	.45	.30	.36	.32	.41
	$\bar{r}$=.35		α=.73		$\bar{r}$=.37		α=.78	

Vegetation
14. Flowering shrubs
24. Wildflowers
32. Evergreen forests
34. Variety of trees

	Linville Gorge			Shining Rock		
r	14	24	32	14	24	32
24	.62			.65		
32	.59	.70		.43	.44	
34	.42	.54	.57	.53	.59	.43
	$\bar{r}$=.57		α=.87	$\bar{r}$=.51		α=.79

Table 35. Environmental feature scales with correlations and reliabilities (continued).

Scale Name / Items	Joyce Kilmer-Slickrock			Shenandoah		
r	14	24	32	14	24	32
24	.58			.66		
32	.30	.32		.47	.41	
34	.20	.22	.57	.55	.50	.64
	$\bar{r}$=.34	α=.72		$\bar{r}$=.52	α=.84	
Reservoirs						
10. Manmade lakes						
Views						
29. Panoramic views						
Wilderness						
17. Vast areas with no trails						
Meadow/Forest						
2. Meadows among forest						
Natural Lakes						
4. Natural lakes						
Virgin Forest						
20. Virgin forests						

somewhat unstable. Ten items, rolling hills, clean-fresh air, caves, rare plants, slow streams with deep holes, boulder fields, marshes, Indian artifacts, streams you can step across, and shaded areas without underbrush, were excluded from further analysis because they did not relate strongly to any of the study scales and they did not appear to have sufficient managerial relevance to warrant their inclusion as single-item constructs.

The study's environmental feature scales had many similarities, but some important differences from those developed by Brown et al., 1977. Our scales had generally lower reliabilities, but this is in part due to the fewer items we tended to include within each scale. For example, we could have increased the Cronbach alpha (α) of the pioneer scale by including the item "Indian artifacts." However, had we done so, we would have reduced somewhat the scale's average correlation among items.

Like Brown et al. (1977), our data permitted the construction of fish related, rugged topography, intrusions, wildlife, and nuisance scales. We obtained a better fit to the data, however, by removing the "manmade lakes" item from the intrusions scale, by splitting the water related scale into streams and natural lakes, and by reorganizing the dense vegetation and meadow/forest scales into vegetation, meadow/forest, and virgin forest scales. Our data did not permit the construction of a rare or unique natural features scale.

Environmental Feature Preference Scale Scores. Table 36 contains the environmental feature scale scores of the study hikers. Hikers responded to the scales very similarly across all four areas. Linville Gorge, Shining Rock, and Joyce Kilmer-Slickrock users felt that all

Table 36. Environmental feature preference scores of Linville Gorge, Shining Rock, Joyce Kilmer-Slickrock, and Shenandoah hikers.[1]

Scale	Linville Gorge				Shining Rock			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Fish related	237	6.09	1.24	10	287	5.97	1.28	9
2. Rugged topography	240	7.18	0.88	5	280	6.87	1.01	7
3. Intrusions	235	1.65	1.44	14	281	2.13	1.76	14
4. Wildlife	233	7.83	1.10	1	281	7.85	1.05	1
5. Nuisance	238	4.83	1.73	12	286	4.74	1.70	12
6. Pioneer	238	5.37	1.36	11	286	5.48	1.29	11
7. Stream related	239	7.44	0.66	4	283	7.37	0.73	3
8. Vegetation	237	7.03	0.81	7	284	6.98	0.87	6
9. Reservoirs	241	3.28	2.17	13	287	3.26	2.17	13
10. Views	241	7.58	0.64	2	286	7.52	0.85	2
11. Wilderness	242	6.22	1.95	9	288	5.69	2.19	10
12. Meadow/forest	243	6.51	1.55	8	289	6.85	1.17	8
13. Natural lakes	238	7.13	1.02	6	286	7.02	1.13	5
14. Virgin forest	242	7.58	0.80	3	289	7.26	1.18	4

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

Table 36. Environmental feature preference scores of Linville Gorge, Shining Rock, Joyce Kilmer-Slickrock, and Shenandoah hikers (continued).[1]

Scale	Joyce Kilmer-Slickrock				Shenandoah			
	N	Mean	Standard Deviation	Rank	N	Mean	Standard Deviation	Rank
1. Fish related	78	5.85	1.38	9	425	5.83	1.40	10
2. Rugged topography	80	6.99	0.87	8	413	6.77	1.01	8
3. Intrusions	78	1.73	1.54	14	345	2.67	1.69	14
4. Wildlife	80	7.88	1.06	1	396	7.81	1.03	1
5. Nuisance	80	4.50	1.84	12	417	4.43	1.80	12
6. Pioneer	78	5.51	1.38	11	422	5.94	1.14	9
7. Stream related	79	7.49	0.54	4	417	7.44	0.61	3
8. Vegetation	80	7.12	0.78	6	413	6.94	0.86	6
9. Reservoirs	78	3.37	2.30	13	428	4.21	2.13	13
10. Views	80	7.58	0.72	3	431	7.62	0.73	2
11. Wilderness	80	5.61	2.06	10	427	5.70	2.04	11
12. Meadow/forest	80	7.06	1.15	7	432	6.88	1.18	7
13. Natural lakes	79	7.25	1.16	5	427	7.39	0.77	4
14. Virgin forest	80	7.65	0.71	2	431	7.08	1.20	5

[1]Response format: 0 to 8 scale, where: 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

environmental features except man's intrusions and manmade lakes added to their satisfaction with the hike. Shenandoah hikers had negative reactions to intrusions but viewed manmade lakes as contributing slightly to satisfaction. Hikers had the most positive responses to wildlife, panoramic views, virgin forests, stream related resources, and natural lakes. Hikers had low, but positive scores on the nuisance scale.

The standard deviation of scales across the four study areas indicated that there was substantial agreement among hikers regarding which features were most important. Variance of response was, however, high for the three scales which were ranked lowest in importance for the experience: nuisance, reservoirs, and intrusions. Variation in the evaluation of manmade lakes was especially high. Finally, there were divergent viewpoints on the contribution of wilderness (large areas without trails) to a satisfying experience.

Relationship between Hiker Types and Preferred Environmental Features.

Linville Gorge. The five Linville Gorge hiker types that were identified by the SAS clustering program and described in Table 24 (page 94) differed significantly ($p = .10$) on seven of the 14 environmental feature scales: fish related, wildlife, nuisance, stream related, vegetation, natural lakes and virgin forests (Table 37). A Duncan's multiple range test indicated that in all scales except the nuisance scale, it was Cluster 5 that was significantly different from the other groups. The hikers in Cluster 5 had consistently lower environmental feature preference scores; this is congruent with their low but slightly positive scores on the REP scales.

Cluster 3 hikers differed from those in other groups by having more positive scores on the nuisance items; they viewed bears, dense undergrowth,

Table 37. Analysis of variance tests of differences in the environmental feature preferences of Linville Gorge hikers typed on the basis of REP scores.[1]

Environmental Feature Scale	Hiker Type 1	3	4	5	7	
1. Fish related	6.03	6.28	6.34	5.41	6.02	F = 3.32 p = .012
4. Wildlife	7.82	8.32	8.01	7.17	7.92	F = 5.26 p = .0005
5. Nuisance	4.80	5.73	4.23	4.15	4.82	F = 3.45 p = .0096
7. Stream related	7.45	7.71	7.68	7.03	7.56	F = 7.28 p = .0001
8. Vegetation	7.10	7.22	7.29	6.63	6.99	F = 3.81 p = .005
13. Natural lakes	7.22	7.35	7.54	6.74	7.06	F = 3.26 p = .013
14. Virgin forests	7.63	7.80	7.45	7.23	7.67	F = 2.40 p = .052

[1]All values in table are mean responses to environmental feature scales.

Response format = 0 to 8 scale, where 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

snakes and insects as contributing moderately to satisfaction. This group also had very positive scores on most REP scales--including seeking stimulation. That experience preference, for example, might explain the positive response to seeing bears or snakes.

Shining Rock. The four clusters of Shining Rock hikers typed on the basis of their recreation experience preferences differed on almost all of the environmental feature scales (Table 38). The Duncan's multiple range test indicated that most of the Cluster 9 hikers had significantly higher environmental feature scores than did other groups (for example, on the pioneer, wilderness, meadow/forest, natural lakes, and virgin forest scales). Cluster 9 and 7 hikers together had significantly stronger preferences for some features: rugged topography and wildlife. These scores are convergent with the generally very positive responses of the two groups to the REP scales.

At the same time, Cluster 1 rated such environmental features as rugged topography, wildlife, pioneer, stream related, vegetation, views, natural lakes, and virgin forests as significantly lower than did Cluster 9 or other hiking groups. Cluster 1 hikers also had the lowest REP scores. Cluster 2 viewed risk taking as detracting from the experience; they also had the lowest score on the nuisance scale (the scale that measured preferences for bears and snakes). Finally, Cluster 7 hikers, who had very strong preferences for wilderness-dependent experiences and who viewed risk moderation, risk avoidance, and meeting-observing new people as detracting from the experience, felt that manmade lakes detracted more from satisfaction than did other hiker groups.

Table 38. Analysis of variance tests of differences in the environmental feature preferences of Shining Rock hikers typed on the basis of REP scores.[1]

Environmental Feature Scale	Hiker Type 1	2	7	9	
2. Rugged topography	6.57	6.72	7.11	7.43	F = 10.78 p = .0001
4. Wildlife	7.48	7.52	8.14	8.41	F = 11.33 p = .0001
5. Nuisance	4.59	4.12	5.22	5.16	F = 5.50 p = .0013
6. Pioneer	5.11	5.55	5.26	6.02	F = 6.41 p = .0004
7. Stream related	7.05	7.36	7.53	7.74	F = 11.24 p = .0001
8. Vegetation	6.62	7.00	7.11	7.36	F = 8.57 p = .0001
9. Reservoirs	3.31	3.87	2.61	3.27	F = 3.17 p = .025
10. Views	7.24	7.59	7.69	7.84	F = 6.89 p = .0002
11. Wilderness	5.34	5.11	5.91	6.20	F = 2.98 p = .0318
12. Meadow/forest	6.59	6.81	6.89	7.28	F = 3.85 p = .0104
13. Natural lakes	6.64	7.00	7.47	7.22	F = 5.88 p = .0008
14. Virgin forest	6.90	7.10	7.47	7.75	F = 6.26* p = .0005

[1]All values in table are mean responses to environmental feature scales.

Response format = 0 to 8 scale, where 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

Joyce Kilmer-Slickrock. The four Joyce Kilmer-Slickrock hiker groups with different preferred recreation experiences differed significantly ($p = .10$) on only six of the environmental feature scales: fish related, rugged topography, pioneer, vegetation, wilderness, and virgin forests (Table 39). The Duncan's multiple range test indicated that Cluster 3 scored lower than the other groups on vegetation and virgin forests. Clusters 3 and 4 together rated the rugged topography and pioneer scales lower than the other two clusters. The lower Cluster 3 scores might have been expected on the basis of their lower REP scores. However, Cluster 4 hikers rated reinforcing self-image, skill testing and development, seeking stimulation, and geography of the area as very important for a satisfying experience. They would, therefore, seemingly value pioneer resources and rugged topography as much as Groups 5 and 6.

Group 5, which felt that social recognition, risk moderation, and meeting-observing new people detracted from the experience and that risk taking and geography of the area added very much to satisfaction, had the highest score on the wilderness feature scale. Finally, Cluster 6, which responded very positively to all REP scales, had significantly greater preferences for fish-related resources.

Shenandoah. Like the Shining Rock respondents, Shenandoah hikers with varying packages of experience preferences differed in a statistical sense on virtually all environmental feature scales (Table 40). The Duncan's multiple range test indicated that Cluster 1's preferences exceeded those of Cluster 6 on many resource attributes: fish-related resources, rugged topography, nuisance, pioneer, stream related, vegetation, views, wilderness, and virgin forests. Sometimes Cluster 2 was

Table 39. Analysis of variance tests of differences in the environmental feature preferences of Joyce Kilmer-Slickrock hikers typed on the basis of REP scores.[1]

Environmental Feature Scale	Hiker Type 3	4	5	6	
1. Fish related	5.62	5.76	5.73	6.63	F = 2.69 p = .055
2. Rugged topography	6.79	6.91	7.36	7.32	F = 2.19 p = .099
6. Pioneer	5.22	5.19	5.67	6.20	F = 2.20 p = .098
8. Vegetation	6.74	7.19	7.31	7.42	F = 2.53 p = .066
11. Wilderness	5.23	5.07	7.00	6.17	F = 2.37 p = .080
14. Virgin forests	7.31	7.86	7.82	7.72	F = 2.43 p = .075

[1]All values in table are mean responses to environmental feature scales.

Response format = 0 to 8 scale, where 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

Table 40. Analysis of variance tests of differences in the environmental feature preferences of Shenandoah hikers typed on the basis of REP scores.[1]

Environmental Feature Scale	Hiker Type 1	2	3	4	6	
1. Fish related	6.90	5.96	6.02	6.03	5.30	F = 7.93 p = .0001
2. Rugged topography	7.25	6.39	7.00	7.16	6.43	F = 6.51 p = .0001
4. Wildlife	8.56	7.94	7.94	7.92	7.45	F = 6.50 p = .0001
5. Nuisance	5.68	3.44	4.58	5.00	4.07	F = 5.87 p = .0002
6. Pioneer	6.86	6.48	6.06	6.02	5.67	F = 6.95 p = .0001
7. Stream related	7.82	7.73	7.50	7.48	7.15	F = 8.58 p = .0001
8. Vegetation	7.72	7.25	7.05	6.81	6.63	F = 10.45 p = .0001
10. Views	8.00	7.50	7.70	7.69	7.49	F = 3.04 p = .018
11. Wilderness	6.73	5.33	5.79	6.15	5.10	F = 4.14 p = .003
12. Meadow/forest	7.56	7.78	6.71	6.71	6.50	F = 5.09 p = .0006
13. Natural lakes	7.74	7.78	7.43	7.40	6.97	F = 7.52 p = .0001
14. Virgin forests	7.67	6.78	7.27	7.14	6.79	F = 3.44 p = .0096

[1]All values in table are mean responses to environmental feature scales.

Response format = 0 to 8 scale, where 0 = most strongly detracts from experience
4 = neither adds nor detracts
8 = most strongly adds

similar to Cluster 6 in their lower preferences for environmental features. These findings are congruent with recreation experience preferences. Group 1 rated virtually all recreation experiences as contributing strongly to satisfaction; Groups 2 and 6 had much lower positive responses to most REP scales. An exception to the generally lower feature preferences of Cluster 2 hikers occurred on the meadow/forest scale. Their very positive response to this construct is difficult to understand on the basis of their REP scale scores. Perhaps the preferences for meadows relates to the group's negative rating of risk taking and privacy.

Conclusions

Three general conclusions can be drawn from our exploration of possible differences in the environmental feature preferences of hikers typed on the basis of their REP scores:

1. Hikers with different packages of experience preferences also differed in preferences for environmental features. This was true across all four study areas.
2. There was a tendency for hiker types who scored high on all REP scales to also score high on the environmental feature scales. The opposite was also true; hikers who had lower experience preference scores also had lower preferences for environmental features.
3. There was some evidence, although tentative, that among the REP constructs, seeking stimulation, the risk scales, meeting-observing new people, social recognition, geography of the area, and privacy had the strongest relationships with preferences for environmental features. Further research is needed to replicate these findings.

Objective 8

To suggest improvements in existing recreation experience preference scales on the basis of study findings.

We have already drawn conclusions regarding the reliability, validity, and utility of the REP scales under previous study objectives. This will not be repeated in detail here. Instead, the recommendations below are based upon accumulated evidence and overall impressions gained through the entire project effort.

REP Scale Reliability

The recreation experience preference scales tested in this study were highly reliable. There appears to be little need for further testing of the scales among wilderness hikers. The REP domains were also generally confirmed. However, consideration should be given to removing the social recognition scale from the achievement domain, to placing the three risk scales in separate domains, and to splitting the leadership/autonomy domain.

It was also noted that items that happened to be located adjacent to each other on the questionnaire tended to have higher than expected correlations. Care should be taken in scale layout to avoid placing too many items with photo-reduced type on any given page. This should be less of a problem now that fewer items are needed per scale.

REP Scale Validity

Our measures of recreation experience preferences using Likert, paired comparison, and rank order scaling demonstrated high convergent validity. Our assessment of the functional relationships among the three scaling procedures suggested that the standard REP scales provided interval data. Further research is, however, needed to test these relationships.

We found also that hikers ranked the relative importance of the REP scales very similarly across the four study areas and across eastern and western test areas. This, too, provides evidence of the validity of the scales.

There appears to be a need for research on the REP scales to have a more solid basis in social-psychological theory. We explored the relationships between experience preferences and both hiker behavior and preferences for environmental features without detailed theoretical foundation. Such a foundation appears to exist in bits and pieces throughout the recreation behavior literature and in a more organized state in the psychological literature. On the basis of theory, hypotheses should be developed and rigorously tested. This would permit us to evaluate the construct validity of the REP scales.

REP Scale Utility

There appears to be a need for more detailed specification and testing of the situations in which the recreation experience preference data have utility for planning and managerial decision making. For example, do the REP constructs have most value at the regional, forest or park, or site planning levels? How should the administrator use the REP constructs as input to selecting a management strategy for, say, a wilderness area? Some answers to these questions already exist, but more theory and hypotheses testing appears needed.

Finally, while we recognize that recreationists have multiple experience preferences, further research is needed on how these varied experience preferences relate to each other, how practically to identify groups of users with similar experience preference sets, and how

recreationists with different experience preference sets can be expected to behave differently. It may be necessary to identify a few key experiences which relate to satisfaction differentially among a given group of recreationists. For example, our data showed that wilderness hikers all placed high value on scenery, learning/experiencing nature, escape, and exercise/physical fitness. These experience preferences will help us understand certain wilderness behaviors and preferences, but they won't contribute much to our understanding of conflicts and differing opinions among users. The social recognition, skill testing and development, independence/autonomy, risk, family togetherness, meeting-observing new people, and privacy constructs are likely more useful.

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APPENDIX A

Joyce Kilmer-Slickrock Contact Sheet

Wilderness Users Contact Sheet
Joyce Kilmer-Slickrock Wilderness

Questions for Group Leader

1. Are you entering or leaving the wilderness area?
   _____ entering
   _____ leaving

2. How many people are in your group today (including yourself)? _____
   a. How many of these are under 16? _____

3. On this visit, does (did) your group plan to stay (stay) out overnight in the wilderness area?
   _____ No
   _____ Yes

   If No, do you plan to travel the Joyce Kilmer Memorial Loop Trail?
   _____ NO _____ YES

4. In your own words, tell us why you are visiting this wilderness area.
   1. _____
   2. _____
   3. _____

5. Mailing address of group leader:

   _____

   _____

   _____

6. Mailing address of two other members of the group (must be 16 or over)

   a. _____

   _____

   _____

   b. _____

   _____

   _____

---

7. Observations by research technician:

   a. Method of wilderness travel:
      _____ Hiking
      _____ Horseback riding

   b. Date: _____
   c. Time: _____ a.m. p.m.
   d. Location:
      _____ Joyce Kilmer Picnic Area - Upper Parking Area
      _____ Joyce Kilmer Memorial Area - Lower Parking Area
      _____ Big Fat Gap Trailhead
      _____ Yellowhammer Gap Trailhead (Tapoco Bridge)

   e. Weather
      1. Rain _____Yes _____ No
      2. _____ Sunny _____ Cloudy
      3. Temperature (estimate) _____

APPENDIX B

Shenandoah Contact Sheet

HIKER CONTACT SHEET

Shenandoah National Park

Questions for Group Leader: _____ I.D. Number

1. How many people are in your group today (including yourself)? _____

   a. How many of these are under 16? _____

2. Are you beginning or ending your hike? _____

3. On this hike, does (did) your group plan to stay (stay) out overnight in the backcountry?

   _____ No

   _____ Yes

4. What is (was) your destination point on this hike? If you had no single destination point, describe your travel route in the backcountry.

   _____

   _____

   _____

5. Mailing address of group leader:

   _____

   _____

   _____

6. Mailing addresses of two other members of the group (must be 16 or over):

   _____

   _____

   _____

   _____

   _____

   _____

---

7. Observations by research technician:

   a. Date: _____

   b. Time: _____

   c. Location: _____

   d. Weather: Rain ____ Yes ____ No

      Sunny _____ Cloudy _____

      Temperature (est.): _____

APPENDIX C

Example of Study Questionnaire (Shenandoah)

SHENANDOAH NATIONAL PARK HIKER SURVEY
1978

All of the following questions refer to the hike you took into the _____ _____ area of Shenandoah National Park. During this hike you were contacted by a member of the research staff and asked to participate in this study.

Backcountry is a frequently used term in this survey. For the purposes of this study, backcountry refers to land area away from motor vehicle roads. A backcountry hiking experience typically takes at least three hours.

YOUR HIKING EXPERIENCE IN SHENANDOAH NATIONAL PARK

1. How many people were in your group on this hike into the backcountry of Shenandoah National Park, including yourself? _____

   a. If you were not alone on this hike, what type of group were you with? (Check the one answer that best describes your group.)

   _____ Spouse only
   _____ Family only
   _____ Family and friends
   _____ Friends and acquaintances
   _____ Club or organization

2. Who among your hiking group played the major role in deciding to go on this hike?

   _____ You
   _____ Your spouse
   _____ A family member other than you or your spouse
   _____ A friend
   _____ A club or organization leader
   _____ Other (please describe) _____

3. On this hike, did your group stay out overnight in the backcountry?

   _____ No
   _____ Yes If Yes, how many nights? _____

4. Was this your first hike into the backcountry of Shenandoah National Park?

   _____ Yes
   _____ No If No, how many times have you hiked into the backcountry of Shenandoah National Park? _____

5. How long before your hike did you decide upon the final trail route you would follow?

   _____ Less than a day
   _____ 1 or 2 days
   _____ 3 to 7 days
   _____ 7 to 14 days
   _____ More than 14 days.

6. What was your source of information about this particular area of Shenandoah National Park as a place to hike? Check as many as apply.

   _____ I had hiked there before.
   _____ Sign along highway or trail.
   _____ Map of Shenandoah National Park
   _____ Newspaper or magazine
   _____ A conservation or outdoor club
   _____ A family member or friend
   _____ Trail guide booklet or publication
   _____ National Park Service literature
   _____ Park Ranger or Naturalist
   _____ Other (please describe) _____

7. Do you feel you had adequate information about Shenandoah's backcountry (its trails, points of interest, rules and regulations)?

_____ Yes If Yes, Go To Question 8.
_____ No If No, please rank each of the following possible backcountry information systems from most preferred (1) to least preferred (4).

_____ Personal contact with a ranger at an entrance station.
_____ Self-operating informational slide program at visitor centers or backcountry permit offices.
_____ Trailhead bulletin board
_____ Backcountry information brochures available at visitor centers or at permit issuing stations.

8. Please indicate your overall feelings about this hiking experience in Shenandoah National Park.

( )	( )	( )	( )	( )	( )	( )
Extremely Satisfied	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Extremely Dissatisfied

9. What season of the year would you most like to hike into this area of Shenandoah National Park?

_____ Spring
_____ Summer
_____ Fall
_____ Winter
_____ It doesn't matter; one season is as good as another
_____ Don't know

10. What time of the week would you most like to hike into Shenandoah National Park?

_____ On a weekday
_____ On a weekend
_____ On a holiday weekend
_____ It doesn't matter; one day is as good as another
_____ Don't know

11. About how often do you go on hikes into backcountry or wilderness areas (include both Shenandoah and other backcountry or wilderness areas)?

_____ More than once a year
_____ About once a year
_____ About once every two years
_____ Less than once every two years

a. What is your favorite backcountry or wilderness area now? (Please be specific; give us the name of the park or area.) _____

_____

b. What was your favorite backcountry or wilderness area during your first year of hiking into roadless areas? (Please be specific; give us the name of the park or area.) _____

_____

12. Which of the following best describes the length of your hikes into the backcountry or wilderness areas? (Check one)

a. _____ Usually stay only a few hours
b. _____ Usually stay a full day
c. _____ Usually stay one or two nights
d. _____ Usually stay more than two nights.

IF YOUR ANSWER TO QUESTION 12 IS A OR B, PLEASE GO TO QUESTION 14.
IF YOUR ANSWER TO QUESTION 12 IS C OR D, PLEASE CONTINUE WITH QUESTION 13.

13. The following statements refer to various backcountry management alternatives. Please check the box that best describes how much you agree or disagree with each alternative.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
1. Prohibit all use of shelters.	☐	☐	☐	☐	☐	☐
2. Remove all shelters.	☐	☐	☐	☐	☐	☐
3. Prohibit all camping in or within one-half mile of all shelters.	☐	☐	☐	☐	☐	☐
4. Allow restricted use of shelters (for example, issue limited permits or first come, first served to a set capacity, etc.).	☐	☐	☐	☐	☐	☐
5. Allow unrestricted use of shelters.	☐	☐	☐	☐	☐	☐
6. Prohibit all camping in the back-country.	☐	☐	☐	☐	☐	☐
7. Prohibit all camping within sight of a trail.	☐	☐	☐	☐	☐	☐
8. Permit trailside camping from dusk to dawn.	☐	☐	☐	☐	☐	☐
9. Permit camping only at designated sites.	☐	☐	☐	☐	☐	☐
10. Permit unrestricted choice of camp-sites.	☐	☐	☐	☐	☐	☐
11. Prohibit all campfires in the backcountry.	☐	☐	☐	☐	☐	☐
12. Prohibit all campfires except in designated fire rings.	☐	☐	☐	☐	☐	☐
13. Permit campfires (no restrictions).	☐	☐	☐	☐	☐	☐
14. Limit the total number of backcountry permits in high use areas during high use periods.	☐	☐	☐	☐	☐	☐
15. The present backcountry regulations have enhanced my backcountry experi-ence.	☐	☐	☐	☐	☐	☐
16. The present backcountry regulations have reduced impacts upon the natural environment.	☐	☐	☐	☐	☐	☐

YOUR PREFERRED EXPERIENCES IN SHENANDOAH BACKCOUNTRY

14. People value hiking into the backcountry for many reasons. Resource managers need to know what experiences you are seeking when you hike into wilderness and backcountry areas. Imagine that you were to hike into the _____ area of Shenandoah National Park next summer. Then rate how much you think each of the following types of experiences would either add to (+) or detract from (-) the level of satisfaction you would receive from the hike. Please do not be bothered by the similarity of some items, as we need all items for greater accuracy. Circle only one number for each item.

Types of Experiences:	Effect on Satisfaction: Adds — Most Strongly	Strongly	Moderately	Slightly	Neither Adds Nor Detracts	Detracts — Slightly	Moderately	Strongly	Most Strongly
1. Being with friends	+4	+3	+2	+1	0	-1	-2	-3	-4
2. Getting out-of-doors	+4	+3	+2	+1	0	-1	-2	-3	-4
3. Gaining a sense of self-confidence	+4	+3	+2	+1	0	-1	-2	-3	-4
4. Feeling your independence	+4	+3	+2	+1	0	-1	-2	-3	-4
5. Taking risks	+4	+3	+2	+1	0	-1	-2	-3	-4
6. Testing and using your equipment	+4	+3	+2	+1	0	-1	-2	-3	-4
7. Doing something with your family	+4	+3	+2	+1	0	-1	-2	-3	-4
8. Being with other members of your group	+4	+3	+2	+1	0	-1	-2	-3	-4
9. Talking to new and varied people	+4	+3	+2	+1	0	-1	-2	-3	-4
10. Learning more about things there	+4	+3	+2	+1	0	-1	-2	-3	-4
11. Viewing the scenery	+4	+3	+2	+1	0	-1	-2	-3	-4
12. Developing personal spiritual values	+4	+3	+2	+1	0	-1	-2	-3	-4
13. Being creative	+4	+3	+2	+1	0	-1	-2	-3	-4
14. Thinking about good times you've had in the past	+4	+3	+2	+1	0	-1	-2	-3	-4
15. Getting exercise	+4	+3	+2	+1	0	-1	-2	-3	-4
16. Resting physically	+4	+3	+2	+1	0	-1	-2	-3	-4
17. Releasing or reducing some built-up tensions	+4	+3	+2	+1	0	-1	-2	-3	-4
18. Experiencing tranquility	+4	+3	+2	+1	0	-1	-2	-3	-4
19. Being near considerate people	+4	+3	+2	+1	0	-1	-2	-3	-4
20. Showing others you can do it	+4	+3	+2	+1	0	-1	-2	-3	-4
21. Being your own boss	+4	+3	+2	+1	0	-1	-2	-3	-4
22. Being near others who could help you if you need them	+4	+3	+2	+1	0	-1	-2	-3	-4
23. Bringing your family closer together	+4	+3	+2	+1	0	-1	-2	-3	-4
24. Being with people having similar values	+4	+3	+2	+1	0	-1	-2	-3	-4
25. Observing other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
26. Experiencing new and different things	+4	+3	+2	+1	0	-1	-2	-3	-4
27. Being close to nature	+4	+3	+2	+1	0	-1	-2	-3	-4
28. Thinking about your personal values	+4	+3	+2	+1	0	-1	-2	-3	-4
29. Doing something creative, such as sketching, painting, photography, etc.	+4	+3	+2	+1	0	-1	-2	-3	-4
30. Keeping physically fit	+4	+3	+2	+1	0	-1	-2	-3	-4

Types of Experiences:	Effect on Satisfaction: Adds — Most Strongly	Adds — Strongly	Adds — Moderately	Adds — Slightly	Neither Adds Nor Detracts	Detracts — Slightly	Detracts — Moderately	Detracts — Strongly	Detracts — Most Strongly
31. Giving your mind a rest	+4	+3	+2	+1	0	-1	-2	-3	-4
32. Feeling isolated	+4	+3	+2	+1	0	-1	-2	-3	-4
33. Becoming better at it	+4	+3	+2	+1	0	-1	-2	-3	-4
34. Teaching your outdoor skills to others	+4	+3	+2	+1	0	-1	-2	-3	-4
35. Avoiding the unexpected	+4	+3	+2	+1	0	-1	-2	-3	-4
36. Being with friends	+4	+3	+2	+1	0	-1	-2	-3	-4
37. Getting to know the lay of the land	+4	+3	+2	+1	0	-1	-2	-3	-4
38. Viewing the scenic beauty	+4	+3	+2	+1	0	-1	-2	-3	-4
39. Thinking about who you are	+4	+3	+2	+1	0	-1	-2	-3	-4
40. Getting away from the usual demands of life	+4	+3	+2	+1	0	-1	-2	-3	-4
41. Experiencing more elbow room	+4	+3	+2	+1	0	-1	-2	-3	-4
42. Testing your abilities	+4	+3	+2	+1	0	-1	-2	-3	-4
43. Helping direct the activities of others	+4	+3	+2	+1	0	-1	-2	-3	-4
44. Chancing dangerous situations	+4	+3	+2	+1	0	-1	-2	-3	-4
45. Studying nature	+4	+3	+2	+1	0	-1	-2	-3	-4
46. Enjoying the sounds and smells of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
47. Having a change from your daily routine	+4	+3	+2	+1	0	-1	-2	-3	-4
48. Being away from noise back home	+4	+3	+2	+1	0	-1	-2	-3	-4
49. Experiencing excitement	+4	+3	+2	+1	0	-1	-2	-3	-4
50. Being on your own	+4	+3	+2	+1	0	-1	-2	-3	-4
51. Knowing others are nearby	+4	+3	+2	+1	0	-1	-2	-3	-4
52. Learning more about nature	+4	+3	+2	+1	0	-1	-2	-3	-4
53. Developing your skills and abilities	+4	+3	+2	+1	0	-1	-2	-3	-4
54. Being free to make your own choices	+4	+3	+2	+1	0	-1	-2	-3	-4
55. Trying to experience some of what the pioneers did	+4	+3	+2	+1	0	-1	-2	-3	-4
56. Learning what you are capable of	+4	+3	+2	+1	0	-1	-2	-3	-4
57. Sharing what you have learned with others	+4	+3	+2	+1	0	-1	-2	-3	-4

13. Resource planners and managers need information from you, the user, to help them make decisions on such important issues as trail and campsite location and design. The items below deal with environmental features which can affect whether or not you have an enjoyable backcountry recreation experience. Please rate each of the features on how much it would add to (+) or detract from (-) your experience when you hike into Shenandoah National Park. Please respond to every statement, and circle only one number for each item.

Environmental Features:	Effect on Your Experience: Adds — Most Strongly	Strongly	Moderately	Slightly	Neither Adds Nor Detracts	Detracts — Slightly	Moderately	Strongly	Most Strongly
1. Deer	+4	+3	+2	+1	0	-1	-2	-3	-4
2. Meadows among forest	+4	+3	+2	+1	0	-1	-2	-3	-4
3. Old cabins	+4	+3	+2	+1	0	-1	-2	-3	-4
4. Natural lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
5. Stocked fish	+4	+3	+2	+1	0	-1	-2	-3	-4
6. Lofty ridges	+4	+3	+2	+1	0	-1	-2	-3	-4
7. Bear	+4	+3	+2	+1	0	-1	-2	-3	-4
8. Dense undergrowth	+4	+3	+2	+1	0	-1	-2	-3	-4
9. Old roads	+4	+3	+2	+1	0	-1	-2	-3	-4
10. Manmade lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
11. Large roaring streams	+4	+3	+2	+1	0	-1	-2	-3	-4
12. Rugged terrain	+4	+3	+2	+1	0	-1	-2	-3	-4
13. Salamanders	+4	+3	+2	+1	0	-1	-2	-3	-4
14. Flowering shrubs	+4	+3	+2	+1	0	-1	-2	-3	-4
15. Old apple trees	+4	+3	+2	+1	0	-1	-2	-3	-4
16. Cascading streams	+4	+3	+2	+1	0	-1	-2	-3	-4
17. Vast areas with no trails	+4	+3	+2	+1	0	-1	-2	-3	-4
18. Rolling hills	+4	+3	+2	+1	0	-1	-2	-3	-4
19. Snakes	+4	+3	+2	+1	0	-1	-2	-3	-4
20. Virgin forests	+4	+3	+2	+1	0	-1	-2	-3	-4
21. Waterfalls	+4	+3	+2	+1	0	-1	-2	-3	-4
22. Steep gorges	+4	+3	+2	+1	0	-1	-2	-3	-4
23. Insects	+4	+3	+2	+1	0	-1	-2	-3	-4
24. Wildflowers	+4	+3	+2	+1	0	-1	-2	-3	-4
25. Springs	+4	+3	+2	+1	0	-1	-2	-3	-4
26. Songbirds	+4	+3	+2	+1	0	-1	-2	-3	-4
27. Streams of different sizes	+4	+3	+2	+1	0	-1	-2	-3	-4
28. Trout	+4	+3	+2	+1	0	-1	-2	-3	-4
29. Panoramic views	+4	+3	+2	+1	0	-1	-2	-3	-4
30. Clean, fresh air	+4	+3	+2	+1	0	-1	-2	-3	-4
31. Caves	+4	+3	+2	+1	0	-1	-2	-3	-4
32. Evergreen forests	+4	+3	+2	+1	0	-1	-2	-3	-4
33. Small furbearers	+4	+3	+2	+1	0	-1	-2	-3	-4
34. Variety of trees	+4	+3	+2	+1	0	-1	-2	-3	-4
35. Evidence of forest fires	+4	+3	+2	+1	0	-1	-2	-3	-4
36. Rare plants	+4	+3	+2	+1	0	-1	-2	-3	-4
37. Wild turkeys	+4	+3	+2	+1	0	-1	-2	-3	-4
38. Evidence of logging activity	+4	+3	+2	+1	0	-1	-2	-3	-4
39. Natural fish populations	+4	+3	+2	+1	0	-1	-2	-3	-4
40. Grouse	+4	+3	+2	+1	0	-1	-2	-3	-4
41. Slow streams with deep holes	+4	+3	+2	+1	0	-1	-2	-3	-4
42. Boulder fields	+4	+3	+2	+1	0	-1	-2	-3	-4
43. Beaver dams and ponds	+4	+3	+2	+1	0	-1	-2	-3	-4
44. Evidence of mining activity	+4	+3	+2	+1	0	-1	-2	-3	-4
45. Marshes	+4	+3	+2	+1	0	-1	-2	-3	-4
46. Indian artifacts	+4	+3	+2	+1	0	-1	-2	-3	-4
47. Streams you can step across	+4	+3	+2	+1	0	-1	-2	-3	-4
48. Murky or discolored water	+4	+3	+2	+1	0	-1	-2	-3	-4
49. Rock outcroppings	+4	+3	+2	+1	0	-1	-2	-3	-4
50. Shaded areas without underbrush	+4	+3	+2	+1	0	-1	-2	-3	-4

Finally, in order to Make Comparisons between the Many Kinds of Backcountry Hikers, We Would Like Some General Information about You. All Information Is Confidential and Will Not Be Identified with Your Name.

14. Your age? _____ years

15. Male /__/ Female /__/

16. What is the highest level of education you have attained so far? Circle one.

Elementary School	High School				College				
8 (or less)	9	10	11	12	13	14	15	16	17 or more

17. In which of the following kinds of places did you spend the most time while growing up (to age 18)? Please mark only one answer.

_____ On a farm or ranch
_____ In the country but not on a farm or ranch
_____ In a small town (2,500 or fewer people)
_____ In a town or small city (between 2,500 and 25,000 people)
_____ In a city (between 25,000 and 100,000 people)
_____ In a suburb of a large city
_____ In a large city (over 100,000 people)

18. Are you currently married?

_____ Yes _____ No

19. Do you have children of the following ages living with you? Check if Yes.

_____ Under 5 years
_____ 5-17 years

20. In what type of community do you now live?

_____ On a farm or ranch
_____ In the country, but not on a farm or ranch
_____ In a small town (2,500 or fewer people)
_____ In a town or small city (between 2,500 and 25,000 people)
_____ In a city (between 25,000 and 100,000 people)
_____ In a suburb of a large city
_____ In a large city (over 100,000 people)

21. Are you presently:

_____ Working
_____ Temporarily laid off
_____ Unemployed
_____ Retired
_____ Full-time homemaker
_____ Student

22. Please describe the usual occupation of the main wage earner in your household. If retired, describe the usual occupation before retirement.

Title: _____ Kind of Work: _____

Kind of Company or Business: _____

23. To the best of your knowledge, what was the combined income for you and all members of your household for 1977? (Check one)

_____ Under $5,000
_____ $5,000 - $9,999
_____ $10,000 - $14,999
_____ $15,000 - $19,999
_____ $20,000 - $24,999
_____ $25,000 - $34,999
_____ $35,000 and over

Thank you! Your contribution to the study is greatly appreciated. If you would like a summary of the results, please print your name and address on the back of the return envelope (NOT ON THIS QUESTIONNAIRE). We will see that you get a copy of the results.

Department of Forestry and Forest Products
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

APPENDIX D

Paired Comparison Measure of Recreation Experience Preferences

YOUR PREFERRED EXPERIENCES IN SHENANDOAH BACKCOUNTRY

14. People value hiking into the backcountry for many reasons. Resource managers need to know what experiences you are seeking when you hike into wilderness and backcountry areas. We have listed in pairs some reasons given to us in the past. Imagine that you were to hike into the _____ area of Shenandoah National Park next summer. Then tell us which experience in each pair would add more to the level of satisfaction you would receive from the hike. Please indicate your choice by checking the box before one or the other of the statements in each pair. (Please do not be bothered by the repetition of items. We need to compare all possible pairs for greatest accuracy.)

Example:

1. /X/ testing and using your equipment /__/ showing others you could do it

The X in the box preceding the item in the left column would indicate that testing and using your equipment would add more to your satisfaction with the hike than would showing others you could do it.

1. /__/ enjoying the scenery and the smells and sounds of nature	/__/ getting away from other people and noise and congestion
2. /__/ being on your own and making your own choices	/__/ exploring and experiencing new and different things
3. /__/ developing and testing your skills and abilities	/__/ getting away for a while to reduce tensions and rest your mind
4. /__/ doing something with your family	/__/ getting exercise to help keep physically fit
5. /__/ being with your friends or people with similar values	/__/ enjoying the scenery and the smells and sounds of nature
6. /__/ learning more and developing your knowledge	/__/ getting away from other people and noise and congestion
7. /__/ getting away for a while to reduce tensions and rest your mind	/__/ being on your own and making your own choices
8. /__/ getting exercise to help keep physically fit	/__/ developing and testing your skills and abilities
9. /__/ being with your friends or people with similar values	/__/ doing something with your family
10. /__/ enjoying the scenery and the smells and sounds of nature	/__/ learning more and developing your knowledge
11. /__/ getting away from other people and noise and congestion	/__/ exploring and experiencing new and different things
12. /__/ being on your own and making your own choices	/__/ getting exercise to help keep physically fit
13. /__/ developing and testing your skills and abilities	/__/ being with your friends or people with similar values
14. /__/ doing something with your family	/__/ enjoying the scenery and the smells and sounds of nature
15. /__/ exploring and experiencing new and different things	/__/ learning more and developing your knowledge
16. /__/ getting away for a while to reduce tensions and rest your mind	/__/ getting away from other people and noise and congestion
17. /__/ being with your friends or people with similar values	/__/ being on your own and making your own choices
18. /__/ doing something with your family	/__/ developing and testing your skills and abilities
19. /__/ enjoying the scenery and the smells and sounds of nature	/__/ exploring and experiencing new and different things
20. /__/ learning more and developing your knowledge	/__/ getting away for a while to reduce tensions and rest your mind
21. /__/ getting away from other people and noise and congestion	/__/ getting exercise to help keep physically fit

22.	/__/ being on your own and making your own choices	/__/	doing something with your family
23.	/__/ developing and testing your skills and abilities	/__/	enjoying the scenery and the smells and sounds of nature
24.	/__/ getting away for a while to reduce tensions and rest your mind	/__/	exploring and experiencing new and different things
25.	/__/ getting exercise to help keep physically fit	/__/	learning more and developing your knowledge
26.	/__/ being with your friends or people with similar values	/__/	getting away from other people and noise and congestion
27.	/__/ developing and testing your skills and abilities	/__/	being on your own and making your own choices
28.	/__/ enjoying the scenery and the smells and sounds of nature	/__/	getting away for a while to reduce tensions and rest your mind
29.	/__/ exploring and experiencing new and different things	/__/	getting exercise to help keep physically fit
30.	/__/ learning more and developing your knowledge	/__/	being with your friends or people with similar values
31.	/__/ getting away from other people and noise and congestion	/__/	doing something with your family
32.	/__/ being on your own and making your own choices	/__/	enjoying the scenery and the smells and sounds of nature
33.	/__/ getting exercise to help keep physically fit	/__/	getting away for a while to reduce tensions and rest your mind
34.	/__/ being with your friends or people with similar values	/__/	exploring and experiencing new and different things
35.	/__/ doing something with your family	/__/	learning more and developing your knowledge
36.	/__/ developing and testing your skills and abilities	/__/	getting away from other people and noise and congestion
37.	/__/ enjoying the scenery and the smells and sounds of nature	/__/	getting exercise to help keep physically fit
38.	/__/ getting away for a while to reduce tensions and rest your mind	/__/	being with your friends or people with similar values
39.	/__/ exploring and experiencing new and different things	/__/	doing something with your family
40.	/__/ learning more and developing your knowledge	/__/	developing and testing your skills and abilities
41.	/__/ getting away from other people and noise and congestion	/__/	being on your own and making your own choices
42.	/__/ getting exercise to help keep physically fit	/__/	being with your friends or people with similar values
43.	/__/ getting away for a while to reduce tensions and rest your mind	/__/	doing something with your family
44.	/__/ exploring and experiencing new and different things	/__/	developing and testing your skills and abilities
45.	/__/ learning more and developing your knowledge	/__/	being on your own and making your own choices

APPENDIX E

Rank Order Measure of Recreation Experience Preferences

YOUR PREFERRED EXPERIENCES IN SHENANDOAH BACKCOUNTRY

14. People value hiking into the backcountry for many reasons. Resource managers need to know what experiences you are seeking when you hike into wilderness and backcountry areas. We have listed 10 reasons given us in the past. Imagine that you were to hike into the _____ area of Shenandoah National Park next summer. Then rank each experience from 1 through 10 in terms of how much it would add to the level of satisfaction you would receive from the hike. Assign a #1 to the experience which would be most important to your satisfaction and a #10 to the least important one. Be sure to assign a rating to each statement below.

Rank	Experience
_____	Enjoying the scenery and the smells and sounds of nature
_____	Getting away from other people and noise and congestion
_____	Being on your own and making your own choices
_____	Exploring and experiencing new and different things
_____	Developing and testing your skills and abilities
_____	Getting away for a while to reduce tensions and rest your mind
_____	Doing something with your family
_____	Getting exercise to help keep physically fit
_____	Being with your friends or people with similar values
_____	Learning more and developing your knowledge

APPENDIX F

Cover Letter Sent with First Questionnaire

COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481
Department of Forestry and Forest Products

Dear Shenandoah Backcountry User:

As you know, demand for backcountry and wilderness use has grown rapidly in recent years. At the same time, the amount of available roadless area stays about the same. This has made the protection of these unique natural areas and the provision of satisfying wilderness experiences increasingly difficult.

To better accomplish these tasks, our public resource agencies need information from you, the user. We would greatly appreciate your help if you would take the half-hour or so necessary to carefully complete the enclosed questionnaire. The questions deal with your trip into the Shenandoah backcountry and your values and preferences regarding backcountry use. Please send the questionnaire back to us in the self-addressed, stamped, envelop as soon as possible. We want the opinions of a truly representative group of people, and so have scientifically chosen a sample of visitors to Shenandoah backcountry. But, the sample will be good only if those few people we have contacted are responsive.

The questionnaire has an identification number for mailing purposes only. Your response will be held in strictest confidence. All results will be analyzed in such a way that your answers on any single question cannot be identified with you.

This is a good opportunity for you to express your views on a significant regional and national issue. If you would like a copy of the results, print your name and address on the back of the return envelope.

Your help in this study is greatly appreciated.

Sincerely,

Joseph W. Roggenbuck

Dr. Joseph W. Roggenbuck
Assistant Professor, Forestry

kch

Enclosure

APPENDIX G

Postcard Reminder

Dear Shenandoah Backcountry User:

Your participation in the Shenandoah Backcountry Use Study is very important. If you have not already returned the questionnaire you received recently, we would appreciate your doing so as soon as possible.

I thank you for your cooperation in this study.

Sincerely,

Joseph W Roggenbuck

Joseph W. Roggenbuck
Assistant Professor, Forestry

APPENDIX H

Cover Letter Sent with
First Follow-Up Questionnaire

COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 951-5481
Department of Forestry and Forest Products

Dear Shenandoah Hiker:

You should recently have received a survey sent to a sample of the many backcountry hikers in Shenandoah National Park. You were randomly selected for this study, and your participation in it is essential if the results are to be useful in guiding future decisions about the use of backcountry areas.

As a hiker, you may be affected by the increasing recreational use of backcountry areas and by management actions taken by the public agencies. The resource agencies should know the preferences of the people who will be most directly influenced by their activities. This study is an opportunity for you to express your personal experiences and feelings as a user.

As of today, we have not received your completed questionnaire. We hope that it is in the mail or that you will take the time to complete the enclosed copy. If you would like to know what other users think, please print your name and address on the back of the return envelope.

Sincerely,

Joseph W Roggenbuck

Dr. Joseph W. Roggenbuck
Assistant Professor, Forestry

kch

APPENDIX I

Cover Letter Sent with
Second Follow-Up Questionnaire

COLLEGE OF AGRICULTURE AND LIFE SCIENCES

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481
Department of Forestry and Forest Products

Dear Shenandoah Hiker:

We want to be of help to you. The goal of our Backcountry Use Study is to document the experiences, problems, and preferences of users of Shenandoah National Park. This information is sought by the National Park Service to aid in their decision-making regarding backcountry management.

We have already heard from about 70 percent of our sample, but we have not heard from you. The remaining questionnaires are critical to the scientific validity of our findings. In case you have misplaced the earlier questionnaire, another copy is enclosed.

Your participation in this survey is vital. Please complete the questionnaire and send it to me in the enclosed postage-paid envelope.

Sincerely,

Joseph W. Roggenbuck

Joseph W. Roggenbuck
Assistant Professor, Forestry

kch

P.S.: If you have already returned the questionnaire, it apparently crossed in the mail. Please disregard this reminder.